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National Air Audit System FY 1984 National Report

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16. ABSTRACT

The National Air Audit System, which was jointly developed by EPA and representatives of State and local air pollution control agencies, was implemented for the first time in FY 1984. The system audited air pollution control activities in 68 State and local agencies in the areas of air quality planning and State implementation plan activity, new source review, compliance assurance, and air monitoring. The goals of the audit system are to identify obstacles that are preventing State and local agencies from implementing effective air quality management programs and to provide EPA with quantitative information for use in defining more effective and meaningful national programs. The report for FY 1984 indicated that, for the most part, State and local agencies have sound programs in each of the four audited areas. Areas of possible improvement were found, however, which will be the focus of various remedial activities.

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I. EXECUTIVE SUMMARY

A. INTRODUCTION

The National Air Audit System (NAAS) was developed as a joint effort by EPA, the State and Territorial Air Pollution Program Administrators (STAPPA), and the Association of Local Air Pollution Control Officials (ALAPCO). The need for the NAAS resulted from the fact that State and local air pollution control agencies have assumed responsibility for an increasing number of programs under the Clean Air Act over the years. The primary goals of the NAAS are to identify any obstacles that are preventing State and local air pollution control agencies from implementing effective air quality management programs and to provide EPA with quantitative information for use in defining more effective and meaningful national programs. The NAAS was implemented initially in FY 1984 and a total of 68 State and local air pollution control agencies were audited by teams composed primarily of EPA Regional Office personnel. The four program areas selected for the FY 1984 audit were air quality planning and State implementation plan activity, new source review, compliance assurance, and air monitoring.

The audits were conducted on-site at the State and local agency offices and generally included a preliminary meeting with key agency staff to discuss audit goals and procedures, discussion of the individual audit questionnaires with personnel in each of the four audit areas, a review of agency files to verify implementation and documentation, and an exit interview with agency management to discuss the preliminary audit results. Individual agency audit reports were drafted by EPA Regional Office staff after the on-site visits. These draft reports were reviewed by the audited agency and then issued by the Regional Office in final form to the audited agency. The individual audit reports were the bases from which the final FY 1984 national report was prepared.

The following sections summarize the findings in each of the four major audited areas.

B. AIR QUALITY PLANNING AND SIP ACTIVITIES

Four major program components within the air quality planning and State implementation plan (SIP) activities area were evaluated in the FY 1984 audit. These areas were air quality evaluation, emission inventories, modeling, and SIP evaluation and implementation.

The FY 1984 audit revealed that the majority of the audited agencies have sound programs in most of these components, but some agencies lag behind in basic planning functions. Major findings from each of the components are described below.

Air Quality Evaluation

This portion of the audit surveyed how State and local agencies use air quality data in evaluating source impacts and planning activities. This section covered the four elements of air quality reports, Section 107 designations/ redesignations, use of special studies monitoring data, and air management/planning. As highlighted below, the audit results clearly indicate that the majority of the audited agencies are performing a basic level of service in air quality evaluation. Major findings were:

° The activities of publishing annual air quality reports and evaluating attainment and nonattainment area designations based on those data are being carried out by at least 75 percent of the audited agencies. Designations to attainment are more prevalent among agencies than are designations to nonattainment. Several agencies saw no incentive for designating new nonattainment areas.

° Monitoring data, and to a lesser extent, modeling results and special studies, are being used by most audited agencies to evaluate and investigate source impacts. Relating ambient data to source impacts is normally done on a case-by-case basis and is usually not governed by documented agency criteria. Also, these activities are apparently not systematically integrated into program evaluation and management priorities.

Emission Inventories

This portion of the audit surveyed the data maintained in the State or local agency emission inventories. It covered several aspects of the inventory including sources, emissions, and other data maintained; frequency of updates; documentation, methodology, and quality assurance checks; and computerization, report formats, and submittals to the national emissions data system (NEDS). The majority of the questions included in the audit of this area were survey questions (i.e., agencies were asked only to state the activities performed and there was little verification of the responses required by the Regional Office). A few questions focused on the quality of the inventory. Major findings were:

° Nationally, the audit results indicate that emission inventories for almost all agencies contain data for major point sources. However, fewer agencies maintain special inventories for sources subject to new source performance standards (NSPS) or national emission standards for hazardous air pollutants (NESHAP), minor unregulated point sources, and area or mobile sources.

° The methodology and factors used to compute inventory data are reportedly consistent with national guidance, and in most cases, adequately documented.

° Most agencies reported some quality assurance or cross-checking of the emission data for accuracy and completeness. However, as many as 18 percent of the audited agencies apparently do not employ at least a basic cross-check at the agency level.

° Most inventories are computerized, but many control agencies are not currently capable of producing reports which summarize the impacts of source controls or process changes, and some cannot aggregate emission sources by category or by geography. Absence of these capabilities might impair their flexibility to track changes in emission trends or reasonable further progress (RFP). However, more investigation will be necessary to determine if this has serious national implications.

° With respect to emission inventories, point source inventories are reportedly adequate starting points for SIP development and related modeling analyses. However, area source and mobile source inventories are receiving less attention in frequency of updates and periodic reevaluation. Most agencies have historically emphasized point sources and deemphasized area sources. However, by 1987, for example, area source emissions of volatile organic compounds (VOC's) will outnumber point source emissions in most urban nonattainment areas, and agencies will have to give more attention to area sources. Area and mobile source emission inventories will therefore receive additional treatment in the FY 1985 audit questionnaire.

Modeling

This section of the audit gathered information on the modeling abilities of the State and local agencies. The objectives were to determine if there was consistency with respect to using air quality models, in following EPA guidance and in communicating with EPA Regional Offices. The three topics covered were the staff's knowledge and capabilities with regard to modeling, documentation that nonreference in-house analyses are coordinated with EPA, and agency review of outside modeling analyses performed by sources or their contractors. The audit results indicate that:

° The majority of the audited agencies are apparently knowledgeable and capable of performing and reviewing most routine modeling analyses. However, some of the agencies need improvement to attain a basic level of knowledge.

° When agencies use nonreference procedures, EPA is usually contacted. However, EPA contact or approval is not always documented.

° Most agencies reported providing guidance to responsible parties prior to modeling by sources. Subsequently, most agencies reviewed the modeling analyses performed by the sources. These reviews varied among agencies. Less than a third of the agencies verify all source modeling. Whether verification is appropriate for all source modeling analyses could not be determined from the audit results.

SIP Evaluation and Implementation

This section of the audit was a review of the periodic evaluation and implementation of SIP's at the State and local levels. The FY 1984 audit focused on several broad areas--timeliness of studies and regulation development, familiarity with EPA policy on site-specific SIP revisions, inspection and maintenance (I/M) and transportation control measures (TCM) implementation problems, and SIP coordination and validation.

In general, the majority of the audited agencies are making some progress in submitting required SIP rules and in completing required studies. However, more than half of the SIP commitments and required regulations had either not yet been submitted or were in progress but late. State and local agencies cited resource problems and lengthy review procedures as causes of delay. It should be noted that Regional Offices lack remedies to induce State and local agencies to make punctual submittals. The audit did not indicate major problems on a national scale in communication among the State and local agencies and the Regional Offices. Isolated disagreements between State/local agencies and EPA Regional Offices do exist, but this is apparently not a national problem.

Other findings were:

° Few of the audited agencies have I/M programs that are known to be achieving the emission reductions claimed in the SIP, but many programs have yet to be in operation for any length of time. A need for the more detailed I/M audit planned in FY 1985 is apparent.

° Transportation control measures (TCM's) are being implemented at 38 agencies. In tracking TCM implementation, the method most used by air pollution control agencies is that of receiving reports from implementing units such as the State transportation agencies. Apparently, only a few agencies directly participate in urban transportation planning. Potentially, TCM implementation could be improved if a larger number of air pollution control agencies were more actively involved in the transportation planning process.

° Two-thirds of the audited agencies indicated that they could show that the SIP reductions were being achieved in practice for point sources. This has been accomplished primarily by relying on routine agency permitting and inspection activities. However, with regard to tracking of reasonable further progress (RFP) toward attainment in ozone (O_3) and carbon monoxide (CO) extension areas, only about a dozen agencies appear able to document the emission reductions claimed in their ozone and CO RFP demonstrations. (RFP is a SIP element required under the Clean Air Act which requires progressive yearly emission reductions in all O_3/CO extension areas.) The absence of effective tracking programs for RFP in agencies where it is required indicates that most agencies either give RFP a low priority or simply lack the ability to track diverse emission sources in a nationally consistent manner. EPA should reexamine its RFP guidance and determine whether more guidance to the States will be necessary to promote a satisfactory level of tracking.

° Most agencies believe that the point and area source growth projections included in the SIP are capable of keeping up with the current growth rates. Only about a fifth of the agencies periodically review their SIP projections against growth data. This level of activity may be appropriate for most areas; however, it may not be adequate in those areas where high rates of growth are occurring.

C. NEW SOURCE REVIEW

A specific objective of the FY 1984 new source review (NSR) audit was to promote reasonable consistency and quality in the way that State and local agency NSR programs are carried out. In order to meet this objective, the FY 1984 audit examined the ways that State and local agencies require and actually implement the preconstruction review of new and modified stationary sources. The findings contained in this report are based upon the responses of 64 air pollution control programs, including 49 States*, the District of Columbia, Puerto Rico, the Virgin Islands, and 12 local agencies.

In summary, the FY 1984 audit was successful as an initial assessment of the present national NSR framework, as well as a valuable feedback mechanism to identify where EPA should emphasize future policy development. The audit verified that the 64 audited State and local agencies are generally familiar with and have strong support for the preconstruction review process. Most often, these agencies were found to have comprehensive programs and to function well in accomplishing the overall goals of the national NSR program. EPA now has a much better national data base that documents many of the NSR policies and procedures used by these agencies.

Various problems were encountered during this first national audit effort that limited its ability to provide definitive conclusions regarding the way that many of the program details actually function. Three particular types of problems that were experienced were the inconsistent quality of the individual audit reports submitted to EPA Headquarters for analysis, the poor condition of a significant number of permit files that were selected for auditing, and the limited number of major source permits that were issued during the period covered by the audit. Some of these problems, particularly those concerning the quality of the audit reports, will be corrected in next year's audit.

The FY 1984 NSR audit was divided into seven major topics. The major findings and conclusions from this initial national audit are described below.

Administrative Procedures

The audited agencies generally performed adequately in terms of the way that permit applications are checked for completeness, tracked during the review process, and (in nonattainment areas) verified for Statewide source compliance. However, only 61 percent of the agencies routinely provide the public with an opportunity to comment on each proposed major source, and only 31 percent routinely provide for public comment on all sources (major and minor) required to obtain permits. Based on this finding, EPA needs to reassess its public participation requirements, particularly with respect to minor source coverage.

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*The State of California does not have authority to issue permits and does not implement a new source review program. These activities are performed by the local air pollution control agencies.

Applicability Determination

With only a few exceptions, agencies appear to use the appropriate geographic applicability criteria, adhere to SIP-approved definitions of "source," and address fugitive emissions in calculating a source's potential to emit. They also appear to use actual emissions (as required) to determine if a "net significant emissions increase" would occur for a source modification. A significant problem was revealed, however, in that approximately 47 percent of the agencies seem to misuse the concept of "potential to emit" when determining a source's applicability to major source review for offsets in nonattainment areas and prevention of significant deterioration (PSD) determinations. Poor file documentation, inconsistent permit conditioning practices, and problems with the issue of Federal enforceability contribute to the overall problem.

BACT/LAER Determinations

Agency policy and procedures appear to be adeqeuate in most cases to address the requirements for best available control technology (BACT) in PSD areas and lowest achievable emission rates (LAER) in nonattainment areas. However, the tendency of at least 17 agencies to set BACT at or near the minimum acceptable level is a basis for further examination of the way that agencies establish BACT on a case-by-case basis.

Ambient Monitoring (PSD)

Based on a limited number of examples, agencies appear to be ensuring that PSD applicants provide adequate preconstruction ambient air quality data. Some of the audit responses suggest that there is a substantial reliance on the use of existing representative air quality data instead of data collected from source-operated monitoring networks. Consequently, next year's audit will focus more upon the agencies' approval criteria for the use of existing representative data.

Ambient Impact Analysis

In most cases, agencies appear to give adequate procedural consideration to the protection of the national ambient air quality standards, PSD increment consumption, and Class I areas with respect to major sources. This includes requiring applicants to use EPA reference models to carry out the required ambient impact analyses. However, the use of actual (rather than allowable) emissions and other technical aspects of modeling by some agencies needs further study before their analyses can be considered fully satisfactory. Also, the audits indicated that approximately 40 percent of the agencies may rely too heavily on the applicant's analyses without adequate review of the modeling procedures and results. With respect to minor sources, auditors recommended in 20 percent of the agencies the development of a tracking system for minor source emissions in areas where the PSD baseline has been triggered. EPA guidance is needed, particularly with respect to PSD increment consumption during short-term averaging periods.

Emissions Offset Requirements

No meaningful major findings could be identified in this area from this initial national audit. This was due largely to the limited opportunities that agencies had to issue permits to major construction projects in nonattainment areas. Responses in some audit reports did indicate, however, that some agencies may not be fully aware of existing offset criteria. EPA should seriously consider the need to clarify and increase its guidance regarding the appropriate use and timing of emissions offsets.

Permit Specificity and Clarity

The new source review audit results raised some important questions concerning the enforceability of permits issued by many agencies. Agencies were found to use a variety of techniques to establish enforceable source limitations for such things as defining allowable emissions, designating applicable compliance testing procedures, and restricting the operation and production capacity of sources to qualify them as minor. EPA needs to carefully examine the issue of permit enforceability, including clarification of the minimum criteria for Federal enforceability of permit conditions. Only after such careful examination can EPA fairly assess the adequacy of current State and local agency permit issuance practices.

D. COMPLIANCE ASSURANCE

Many States and locals showed one or more strong points characteristic of a successful air compliance program, such as high source compliance rates supported by high inspection frequency rates, performance of all required NSPS source tests, expeditious resolution of violators, and few long-term violators. These activities were adequately reflected and validated by the national compliance data system. Other States had source files that were for the most part well organized, up-to-date, and complete, reflecting a reasonable profile of each source.

However, the compliance audits also revealed that several States and locals, to a varying extent, have weaknesses in three areas vital to a strong and effective compliance program. First, files generally do not contain strong and verifiable information reflecting a reasonable profile of each source. Second, many inspection reports are of poor quality (no mention of operating or emission parameters or pollutants emitted). It is unclear whether the problem is with the inspections themselves or just the reports. Third, the reviewed agencies' enforcement efforts are not always effective in reducing the number of long-term violators by expeditiously returning documented violators to compliance.

E. AIR MONITORING

The Federal monitoring regulations which were promulgated in 1979 require audits as part of the quality assurance program. In particular, State and local agencies are required to participate in EPA's national performance audit program and to permit an annual EPA system audit of their ambient air monitoring program. Consequently, in 1980 EPA issued comprehensive guidance for conducting system audits of State or local agencies. Because of the lack of national consistency in conducting the annual system audit the air monitoring audit committee developed in 1983, as part of the NAAS effort, an interim monitoring questionnaire for use in FY 1984. The interim questionnaire, which was to be revised for use in FY 1985, was intended to provide an overview and summary asessment of the ambient air monitoring program audit.

Based on the audit results and periodic status reports on the State and Local Air Monitoring Stations (SLAMS) and National Air Monitoring Stations (NAMS) networks, it can be concluded that nationwide, State and local agencies have done a commendable job in their efforts to establish and operate criteria pollutant ambient air monitoring networks. About 94 percent of the agencies audited were found to have all of their monitors in full compliance with network design and siting criteria. This finding compares closely with EPA's annual SLAMS status report which listed that about 97 percent of the 4888 SLAMS* were operating and complying with the monitoring and reporting regulations. These figures indicate a most satisfactory performance overall. Results of the audits conducted in FY 1984, however, did identify several monitoring activities, as well as confirm previous knowledge of other areas that do need further attention. These items include late data submissions, failure to attain 75 percent data capture, the need to replace old or worn out equipment, incomplete or outdated standard operating procedures, and inadequate precision and accuracy data submittals.

Approximately 32 percent of the audited agencies typically submit ambient NAMS data later than required by regulation (90 days after the end of each quarter). Several reasons are cited for this situation including staff shortages, inadequate computer capabilities, length of laboratory analysis time for lead, and the need for additional data validation time. A couple of actions are now underway to reduce the magnitude of the problem. First, several States have initiated steps to upgrade their computer capabilities. Second, a regulatory change to the Part 58 monitoring regulations is being developed that will increase the number of days for submitting data from 90 to 120 days after the end of the calendar quarter in which it was collected, as being more reflective of EPA's data needs.

Maintaining a 75 percent data capture rate was a problem for roughly 34 percent of the audited agencies. Further study is needed to determine the major cause of the problem. In reviewing the data capture results for the 66 percent of the agencies without significant problems meeting the 75 percent goal, it was determined that 90 percent of their sites met the 75 percent completeness criteria. While the goal is to have 100 percent of the sites meeting completeness criteria, it is unlikely from a practical viewpoint that more than 85 to 90 percent is achievable. Data are lost due to both scheduled events such as preventive maintenance tasks and quality control functions (calibration/zero and span/precision checks) and unscheduled events such as repairs, vandalism, site maintenance or construction, power failure, loss of lease agreement or the like.

Results of the air monitoring audit also revealed that some agencies were experiencing equipment failure problems due to old or worn out equipment. These findings were consistent with a 1983 STAPPA/ALAPCO air monitoring equipment survey. In response to these needs, EPA has recommended that a portion of the Section 105 air grants be allocated for replacement of ambient instrumentation.

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*1362 of these are National Air Monitoring Stations (NAMS).

All of the State Quality Assurance Plans have received formal approval by the EPA Regional Offices. However, since the formal approval of these plans, Federal reference methods procedures have changed and in some cases better operational procedures have been devised. The audit results indicate that several State and local agencies need to modify their Quality Assurance Plans to address these changes. The necessary modifications are currently in progress in some agencies and will be made by others in the near future.

No significant deficiencies were identified with respect to the annual network reviews or the annual SLAMS Air Quality Data Report. The few minor problems discovered will be easily corrected.

The precision and accuracy audit results appeared as a substantial problem in terms of the adequacy of response to the question and the failure to attain precision and accuracy goals. However, it is believed that the largest part of this problem could be attributed to the particular question asked because only 48 percent of the respondents provided an adequate response. Based on available data in EPA's data base, it can be concluded that most agencies are providing the required precision and accurancy data, and over the last three years are improving the data quality. It appears the majority of the agencies should meet the precision and accurancy goals (plus or minus 15 percent for precision, plus or minus 20 percent for accuracy) established in the survey in the next few years. An effort to remove the ambiguity of this question and other problem questions contained in the audit questionnaire is underway. The new questionnaire will attempt to minimize the resubmission of massive blocks of information already within the EPA's possession and limit questions to one subject area.

F. EVALUATION OF THE FY 1984 AIR AUDIT EFFORT

The FY 1984 NAAS has proven to be a valuable tool to focus attention upon various aspects of the national air quality management program that need improvement. In some cases, it has shown the need for improved guidance from Headquarters and in other cases it indicated areas where State and local control agencies need to remedy deficiencies. These conclusions are apparent even though in some cases the audit responses were inconsistent with regard to comprehensiveness, level of detail, and other factors. In some instances, ambiguous audit questions led to difficulties in obtaining clear responses.

Adjustments to the audit program in FY 1985 have been made in order to make it even more useful. These adjustments include redesignating the audit questionnaires to make the questions clearer and more uniform, streamlining the questionnaires by removing unnecessary material, and by developing more specific guidelines for the FY 1985 audit program.

II. INTRODUCTION

Auditing of State and local agencies is not a new activity as the EPA Regional Offices have been conducting some form of evaluation and audit program for many years. However, the frequency, depth, and procedures for conducting these audits have varied greatly from Region to Region within EPA and even from State to State within a Region. This inconsistency was reflected in a report issued by EPA's Office of Air Quality Planning and Standards (OAQPS) on the EPA Regional Office air audit programs (Survey of Regional Air Audit Programs, June 1983). Even before this survey, the State and local agencies had begun expressing concern about the inconsistency of the Regional oversight programs. The general tenor of the comments was that EPA should develop uniform evaluation criteria that could be applied nationwide. This concern led to the development of the National Air Audit System (NAAS), a joint effort of the State and Territorial Air Pollution Program Administrators (STAPPA), the Association of Local Air Pollution Control Officials (ALAPCO), and EPA.

The need for the NAAS evolved as State and local air pollution control agencies assumed responsibility under the Clean Air Act for an increasing number of programs. The EPA responded to the concerns of the STAPPA and ALAPCO members by agreeding to participate in a STAPPA/ALAPCO/EPA workgroup charged with developing and directing the implementation of an auditing system that would ensure the desired national consistency and would confirm that State and local air pollution control programs were operating in such a manner as to satisfy the national requirements of the Clean Air Act.

The workgroup decided that the primary goals of the NAAS should be to identify any obstacles preventing State and local agencies from implementing an effective air quality management program and to provide EPA with information which could be used to develop more effective and meaningful national programs. The NAAS would provide audit guidelines that EPA and State and local agencies could use (1) to meet statutory requirements; (2) to assist in developing an acceptable level of program quality; (3) to account for the achievements, shortcomings, and needs of various air programs; (4) to identify programs needing further technical support or other assistance; and (5) to manage available Federal, State and local resources effectively so that the national ambient air quality standards are attained and maintained as expeditiously as possible.

In late 1982, the STAPPA/ALAPCO/EPA workgroup reached an understanding on the development of a national air audit program. In April 1983, the group identified the audit topics and appointed subcommittees to write the audit guidelines. The four program areas selected by the workgroup for which guidelines would be written were air quality planning and State implementation plan (SIP) activity, new source review, compliance assurance, and air monitoring. Standardized audit guidelines for each program area were written by the subcommittees. The subcommittees were chaired by a

State agency person, with an EPA staff person serving as coordinator. Local agencies and the EPA Regional offices were also represented on each subcommittee. In October 1983, the workgroup developed the protocol for implementing these audit guidelines.

The guidelines were used by EPA Regional Offices in FY 1984 to audit 68 State and local air pollution control programs, including all States except California, plus Puerto Rico, the Virgin Islands, and the District of Columbia. The local agencies audited were:

Albuquerque, NM
Allegheny County, PA
Birmingham, AL
Charlotte, NC
Chattanooga, TN
Chicago, IL
Cincinnati, OH
Cleveland, OH
Cook County, IL
Dayton, OH
Louisville, KY
Philadelphia, PA
Puget Sound, WA
Spokane County, WA
Ventura County, CA
Wayne County, MI

The California State Agency was not audited because the local district agencies there are responsible for implementing the various air quality management programs. All program areas were not audited in each agency because the four activities selected for audit were not performed by all agencies.

The involvement of State/local personnel as members of the audit teams was encouraged by the workgroup, but only a few agencies were able to participate this first year. Out-of-state travel restrictions, scheduling, and travel costs were factors which prevented greater participation.

The level of involvement of the Regional Office management staff in the audit visits varied from Region to Region. The initial meetings and exit interviews with the agencies were led by Regional Office staff ranging from Division Directors to Section Chiefs. One Regional Office held a public meeting with each State agency a day before the site visits.

The audit teams varied in size, and all four of the program areas were not always audited at the same time. The number of auditors in an agency at any one time rarely exceeded five.

EPA Headquarters personnel observed 13 audits. This was to provide national overview on the audits and was part of the quality assurance program to which STAPPA, ALAPCO, and EPA had agreed.

The protocol used by the EPA Regional Offices in conducting the audits included advance preparation before to the site visit, an initial meeting with the agency director, discussions with agency staff, review of the agency files, and an exit interview.

The advance preparation involved, among other things, sending a letter to the agency well in advance of the audit to confirm the date and time to and identify the individuals performing the audit. The guidelines and questionnaires were also provided to the agencies with a request to complete the questionnaire before the visit and, in some cases, to return them to the EPA Regional Offices.

The site visits were conducted generally in four phases:

° The audit team met with the agency director and key staff to discuss the goals and the procedures to be followed.

° The auditors discussed the questionnaire with the personnel in charge of each of the four audited activities.

° The agency files on compliance, permits, air monitoring, and SIP documents were reviewed to verify the implementation and documentation of required activities.

° An exit interview was held to inform agency management of the preliminary results of the audit.

The Regional Offices drafted a report after each site visit and requested that the audited agency review it before it was made final. The individual agency audit reports were used by EPA to compile and write the final FY 1984 national report.

The national report was extensively reviewed in draft form before it was made final. Several persons who commented on the draft of the report suggested that it should contain recommendations for addressing the deficiencies that were uncovered. Although some recommendations appear in the report, more recommendations were not included for the following reasons:

° This is the first experience with the national air audit system. The primary purpose of this initial audit was to establish a baseline of knowledge about activities of the State and local agencies.

° State-specific deficiencies uncovered by the Regional Office audit teams in individual agencies are being addressed through the Section 105 grants and other administrative mechanisms that involve interaction between the Regional Offices and the State and local agencies.

° EPA will address the national implication of many of the more prevalent deficiencies identified in the FY 1984 audit when EPA revises its FY 1985 operating plan and develops its FY 1986 program plan and its FY 1987 budget.

° A number of the deficiencies cited in the FY 1984 national report may have been a result of vagueness in the questionnaires used in the audits. For example, some responses to a number of questions could not be understood because the respondents were apparently confused by the wording of the questions. Where this happened, EPA has significantly revised questions for the FY 1985 audits to minimize the vagueness.

° EPA expects to address more recommendations in the FY 1985 national report. The audit for FY 1985 has been redesigned in many respects to learn more about the nature of some of the deficiencies uncovered in the FY 1984 audit.

The implementation of the NAAS in FY 1984 was the first step of an evolving process. The FY 1984 audits provided an opportunity for EPA to identify differences between EPA policy, as reflected in the audit guidelines, and the implementation of policy by State and local agencies. The EPA will use the findings of the FY 1984 audits to establish a baseline of information on State and local air pollution control programs. The progress agencies are making to improve their program operations will then be measured in future EPA audit activities.

For State and local agencies, the National Air Audit System is an important step in ensuring national consistency in the air programs and in providing another opportunity to exchange ideas with and to learn from other air pollution control agencies. Above all, the NAAS should result in a national air quality program that will more effectively and expeditiously achieve the goals of the Clean Air Act.

III. AIR QUALITY PLANNING AND SIP ACTIVITIES

A. INTRODUCTION

Fifty-two State and nine local air pollution control agencies[1] were audited for air quality planning and SIP activities. This is the first time a national audit of this type had been made of their performance in this area. The 41 questions covered in this chapter were developed from guidelines prepared jointly by U.S. EPA and State and local agencies.

After receiving the drafts of the individual agency audit reports, EPA classified the responses from each agency into 60 separate answers corresponding to each question and its parts. Each agency's response and comments were then tabulated onto a worksheet from which national summaries were compiled.

This chapter summarizes the 1984 audit findings of the Air Quality Planning and SIP Activities chapter in each of its four major areas: air quality evaluation, emissions inventories, modeling, and SIP evaluation/implementation. The major findings and conclusions of each area are presented first, followed by results of individual audit questions in each area. A few selected questions are illustrated with bar charts.

B. MAJOR FINDINGS AND CONCLUSIONS

Air Quality Evaluation

It is clear that a majority of the 61 audited agencies which are covered in this chapter are performing a basic level of service in air quality evaluations.

1. Air Quality Reports

Nationally, the results indicate that the activities of publishing air quality data and evaluating attainment and nonattainment area designations based on that data are being carried out by most agencies.

- ° Agencies appear to be doing a good job disseminating air quality information. Eighty-three percent of the State and 78 percent of the local control agencies published data annually or more often (see Figure 1).

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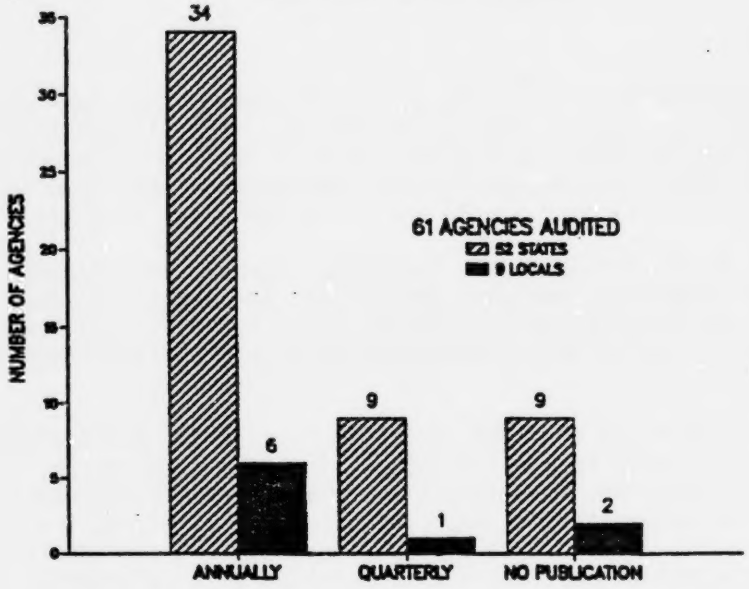
[1] For the purposes of this chapter, the 52 "State" agencies include: 49 States (all except California), the District of Columbia, Puerto Rico, and the Virgin Islands. The 9 local agencies include: Albuquerque, New Mexico; Birmingham, Alabama; Charlotte, North Carolina; Chattanooga, Tennessee; Louisville, Kentucky; Philadelphia, Pennsylvania; Pittsburgh, Pennsylvania; Puget Sound, Washington, and Ventura County, California. In addition, Chicago and Cook County, Illinois are included in the section on emissions inventories.

FIGURE 1. HOW OFTEN DOES YOUR AGENCY PUBLISH AIR QUALITY DATA?



2. Section 107 Redesignations

- Although 75 percent of the control agencies reviewed Section 107 redesignations during 1983 and either have submitted or are in the process of submitting these to EPA, it should be noted that several agencies see no incentive for designating new nonattainment areas.

3. Special Studies

Special studies are used by most agencies to evaluate existing point source limits. These activities sometimes result in revised SIP emissions limitations.

- Seventy percent of the audited agencies report that they reenter the planning process and revise SIP or permit limits when there are conflicts between special study data and existing data.

4. Air Management/Planning

Most agencies use monitoring data and modeling results to focus on source evaluation and investigation. However, the results also indicate that the process of relating ambient data to source impacts is usually done as needed and is not defined by a formal plan or by established criteria documented within the agency.

- Only 34 percent have a formally documented way of using exceedance data to help determine program priorities on a geographic basis.

- Only 43 percent use internally documented criteria or procedures for relating source impacts to ambient data.

These results indicated that air quality data are periodically reviewed and used on an as needed basis for source analyses. On the other hand, in the majority of agencies, there is an absence of a documented program to review and evaluate air quality data and make the appropriate SIP planning corrections. States nationally have the capability to use air quality data effectively to meet specific needs, but apparently do not have documented procedures to integrate these data into the planning program.

Emissions Inventories

1. Sources, Emissions, and Other Data Maintained in Emissions Inventory

Nationally, the audit indicates that emissions inventories for almost all agencies contain data for major point sources. However, many do not cover NSPS, NESHAP, unregulated minor point sources, and area sources.

- Ninety-seven percent (61 out of 63 agencies) maintain emissions and other data for major point sources.

- Sixty-seven percent maintain both actual and allowable emissions rates.

- Sixty percent maintain NSPS and 56 percent maintain NESHAP emissions data.

- Fifty-two percent maintain emissions and other data on unregulated minor sources and area sources.

2. Update Frequency

- Sixty-five percent of agencies update the criteria pollutant emissions inventory annually; this is usually performed through a combination of permitting, inspecting, and source reporting. Forty-three percent indicate that they update inventories continually or as changes occur.

3. Methodology, Documentation, Quality Assurance

The methodology and factors used to compute inventory data are apparently consistent with national guidance and in most cases, adequately documented. There appears to be some kind of cross-checking of the data for accuracy and completeness; however, these are predominately error checks. Comprehensive quality assurance of emissions inventories is not normally performed by most agencies.

- Eighty-four percent of the agencies believe that the inventory is adequately documented. Only one agency reported having inadequate documentation of its inventory.

- Eighty-four percent of the agencies perform some type of validity check, 76 percent check for missing sources, and 71 percent compare inventory to other records such as permits or enforcement.

- Sixty-seven percent use mobile source data consistent with DOT/MPO transportation data or Section 208 water quality projections.

4. Computerization, Reports Formats, NEDS Submittals

Most inventories are computerized, but many agencies cannot produce reports summarizing impacts of source controls or process changes, and some agencies cannot aggregate sources by category or by geography. The inventories, as described by most agencies, are apparently adequate as starting points for control strategy evaluations.

- Eighty-two percent say the inventory has adequate temporal and spatial resolution for SIP analyses and related modeling activities. However, most agencies did not indicate if this degree of resolution extends to projected year inventories or just the baseline inventory. It was also not clear if mobile and area source inventories are capable of the same resolution as point sources.

- Eighty-one percent of all agencies maintain their inventories on a computer.

- Seventy-six percent can aggregate emissions sources by source category, and 74 percent can aggregate sources by geographic units such as counties or census tracts.

- Seventy-three percent of the agencies say they submit NEDS data annually to the EPA Regional Office.

Modeling

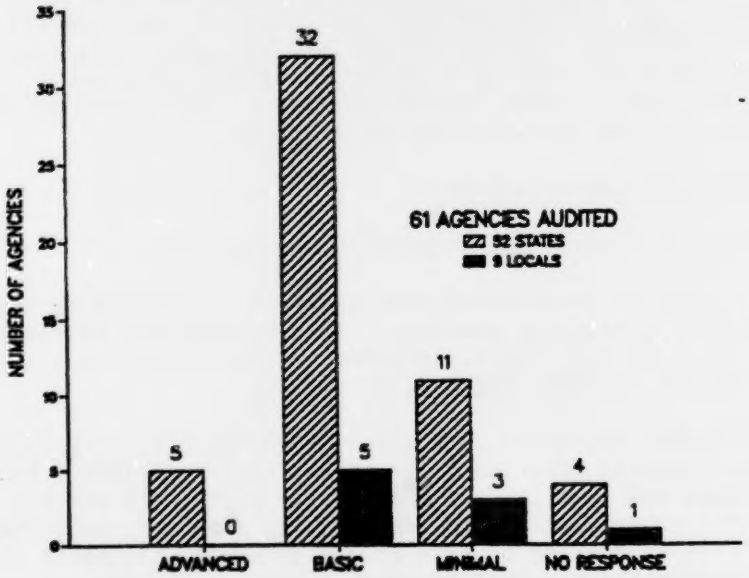
1. Knowledge and Capabilities

- The majority of agencies are apparently knowledgeable and capable of performing and reviewing most routine modeling analyses. Sixty-nine percent of the State and local agencies audited have a basic knowledge or better with respect to the use of EPA models and guidance, however, 14 agencies (23 percent) either do not have the ability to use EPA models and guidance or can run only screening models (see Figure 2).

- Apparently, 40 percent of most modeling is done within the agency (in-house), 30 percent is done outside by source or contractor and the other 30 percent could not be determined. Generally, the audit results were not specific enough, for most agencies, to determine what types (new or existing source, PSD, etc.) of modeling these figures cover.

- ° Eighty-three percent of the control agencies have in-house or computer links to models and data bases (at least 23 agencies have EPA UNAMAP versions 4 and 5 models on-line).
- ° Eighty-two percent believe that their staff keep abreast of current modeling practice.
- ° Seventy percent of agency staffs are, or claim to be, familiar with modeling for bubbles, redesignations, new source review (NSR), or nonattainment areas.

FIGURE 2. WHAT IS STAFF KNOWLEDGE ON EPA MODELING GUIDANCE?



2. Documentation and Guidance

- ° When agencies use nonreference modeling procedures, EPA is usually contacted; however, documentation of EPA contact or approval is not always done.
- ° Although 32 agencies claim to have sought EPA's approval on nonreference procedures, only 19 documented the request.

- Fifty-three percent (32 agencies) said EPA was routinely contacted for approval of nonreference procedures, although it is not clear that prior approval was routinely sought. Thirty-nine percent apparently never used nonreference procedures and five percent said they did not contact EPA when using them.

- Seventy-one percent of the control agencies indicated that documentation is available to show that EPA guidelines and procedures are followed. Only four agencies (seven percent) reported that deviation from EPA procedures had not been documented.

3. Control Agency Review of "Outside" Modeling Analyses

- Eighty-five percent of the agencies provide guidance to sources or contractors prior to model application.

- Seventy-four percent reviewed outside modeling by a source or contractor in 1983. In reviewing modeling analyses by sources or contractors, agencies use varying levels of sophistication from complete replication to simplified screening models. Eighteen agencies (29 percent) replicated or verified all outside modeling. Another 35 percent performed some type of verification, such as a review using screening models, on at least some of these outside analyses. Twenty-one percent of the agencies performed no verification.

SIP Evaluation and Implementation

1. Timeliness of Studies and Regulation Development

In general, agencies were making some progress in submitting required rules and in completing required studies. The audit did not indicate major problems, on a national scale, in communication among the State and local agencies and EPA Regional Offices.

- Where formal schedules were approved in the SIP, only 25 percent of the agencies reported that all required regulations had been developed and submitted to EPA. While another 54 percent of the agencies reported that they were making progress, submittals were still either missing or late (see Figure 3). Available resources and lengthy State procedures were cited as problems.

- Thirty-three agencies said additional studies (for CO hotspots, TCM's, TSP, etc.) were required in the SIP, and of those, 27 said the intent of such schedules had been carried out.

- Thirty-four percent (21 agencies) said the SIP contained schedules for adoption and implementation of Part D rules, but only three agencies identified slippages in the schedules. It was not evident from the responses how most agencies track schedules or who is responsible for this. It was also not clear whether affirmative responses refer to formally submitted schedules or subsequently agreed to schedules.

FIGURE 3. HAVE ALL REQUIRED SIP ELEMENTS BEEN SUBMITTED?

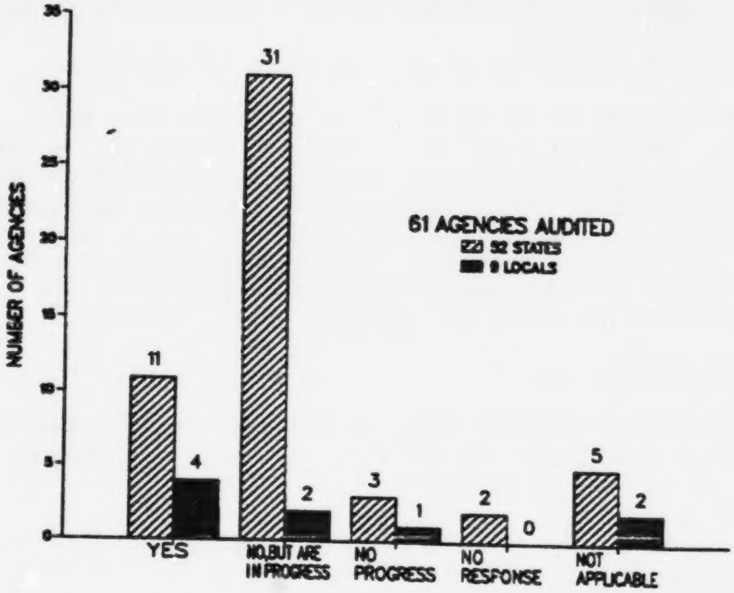
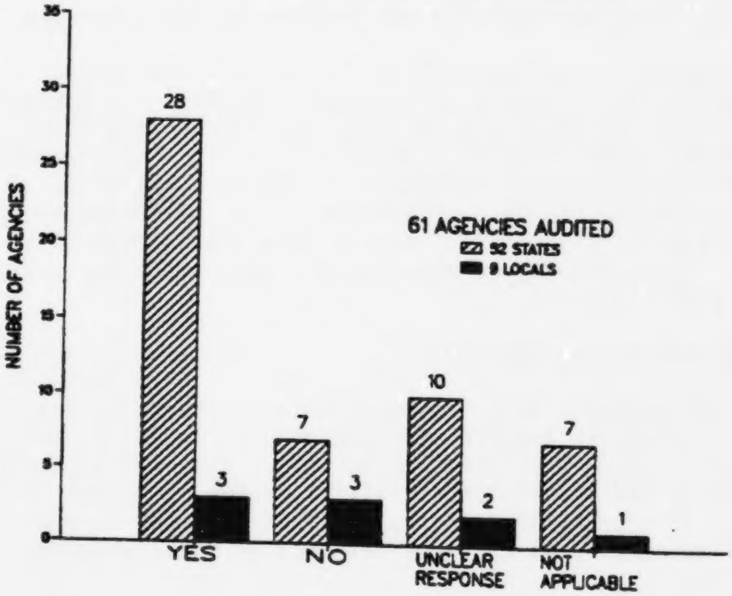


FIGURE 4. ARE SITE-SPECIFIC SIP REVISIONS CONSISTENT WITH EPA GUIDANCE?



- Fifty-four percent (33 agencies) indicated progress was being made on SIP deficiencies identified by the EPA Regional Office. Two agencies indicated progress was not being made and ten agencies either did not respond or their answers were inconclusive.

2. Familiarity with EPA Policy on Site-Specific SIP Revisions

- Fifty-one percent (31 of 61 agencies) said that they had processed site-specific SIP revisions (see Figure 4). Bubbles and emissions trading were the most commonly reported actions. While most agencies indicated that their revisions were consistent with EPA policy, ten agencies indicated that some of their bubbles and variances were not. The predominant mechanism used by States to assure consistency was allowing the EPA Regional Office to review and comment on each revision.

3. I/M, TCM Implementation

The audit indicated few agencies have I/M programs that are known to be achieving the reductions claimed in the SIP. However, many progams have yet to be in operation for any length of time.

- At the time of the audit, of the 32 agencies required to have I/M programs, only 7 agencies could show that I/M was fully implemented consistent with the credit taken in the SIP. Five agencies said the program was inconsistent with the SIP (low failure rates, poor participation, etc.). The other 17 agencies required to have I/M programs could not yet make this determination. Most of these programs either had not yet started by the end of the audit or had been in operation for less than 1 year. Only three agencies did not respond to the questions.

- Of the 38 agencies implementing TCM's, only 21 indicated responsibility for tracking or implementing them. It appears that only eight agencies are actively involved in TCM tracking through either membership on a Metropolitan Planning Organization (MPO) transportation committee or periodic review of the transportation improvement program (TIP). Nineteen agencies track TCM's primarily through reports from the implementing agencies. The remaining 11 agencies are apparently not actively involved (see Figure 5).

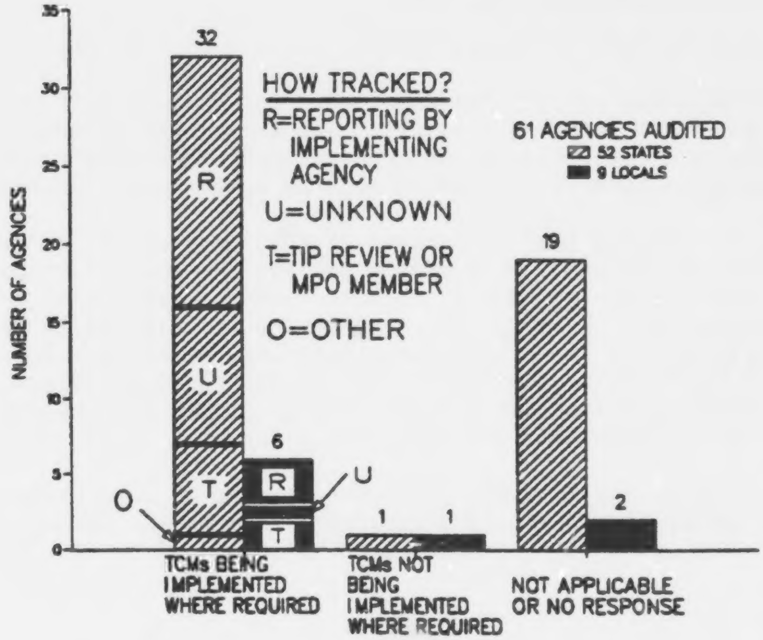
4. SIP Coordination and Validation

Forty agencies (66 percent) said they were able to show that the emissions reductions claimed in the SIP were achieved in practice, while 11 agencies (18 percent) said they could not do this. Most (35 agencies) rely on their permitting and inspection activities as the principal verification method. It appears that the majority of agencies do not include tracking implementation as a central element of their program.

In the reasonable further progress (RFP) area, only a dozen or so agencies appear to be making much effort to document the emissions reductions claimed in their ozone and CO RFP demonstrations.

- ° Twelve of the 26 agencies with 1987 extension areas for ozone have a formal system for documenting RFP emissions reductions for VOC.
- ° Eleven of the 34 agencies with extension areas for CO have a system for tracking CO RFP reductions.
- ° Thirteen agencies with extension areas for ozone claimed they could assure that the RFP data were consistent with agency enforcement and emissions inventory data, but seven agencies could not.
- ° For CO, only 12 agencies could assure that the RFP CO emissions reductions were consistent with agency emissions inventory data, and 11 agencies could not.
- ° Only 18 percent (11 agencies) reported performing a periodic review or evaluation of the SIP growth projections. Fifty-nine percent (36 agencies) either did not periodically evaluate growth or thought it was unnecessary to do so. Twenty-five agencies thought their SIP's projections to be adequate for current growth in both point and area sources.

FIGURE 5. HOW IS TCM IMPLEMENTATION ASSURED?



C. AIR QUALITY EVALUATION

This section contains the detailed audit information on how air quality data were used by State and local agencies in the evaluation of source impacts and planning activities. Four main areas are covered: air quality reports, Section 107 designations/redesignations, special studies, and air management/planning.

In the air quality reports area, the audit asked how frequently agencies published air quality monitoring data (i.e., provide the data to the public). Although not a part of the question, the lag time interval from retrieval to publication of the data was recorded, if given by the agency in their response.

The second area evaluated whether Section 107 redesignations were being carried out. A list of submitted redesignations and a description of the agency's review process was requested.

The third area concerned whether agencies used results of special monitoring studies in periodic planning or SIP activities. Agencies were requested to describe the extent to which air quality data from special studies are compared to the SIP air quality data base.

The fourth area covered the use of air quality data for program planning and management. Agencies were asked to describe their use of monitoring results or modeling studies to focus on source compliance. They were also asked if they had a formal way to use exceedance data to define geographic priorities, and if they had established criteria or a plan to relate source data to ambient impacts.

Responses to Individual Questions

1. Air Quality Reports (Question A1)

Question A1 asked if agencies regularly publish data from their ambient air quality monitoring stations. The intent was to determine if these data are made available to the general public. Auditors were to review the agency's most recent public reports on air quality data.

This is an activity that 83 percent of the State and 78 percent of the local agencies perform. Most States publish the data in an annual air quality report that includes data tables and an analysis of current statewide air quality. Usually, the reports are distributed to requestors and others on a mailing list, including libraries, media, and legislators. Copies of the report were attached to some of the audit questionnaires. A couple of State agencies that did not publish annual reports indicated their intention to begin this activity in the future.

The question on lag time was not asked as part of question A1, however, the agency responses, if given, were summarized. About one-third of the responding agencies reported their lag time. Of these, 30 percent published the report within 5 months from the end of the collection period and 90 percent published within a year from the end of the collection period.

Air Quality Reports

		Quarterly	Annually	No
A1 Does Agency publish air monitoring data with comparisons to the NAAQS? (61 responses)	Agencies	10 16%	40 66%	11 18% *

	0-5 Months	5-12 Months	12 or more Months
A1 What is the lag time between retrieval and publishing of air quality data? (20 responses)	30%	60%	10%

2. Section 107 Redesignations (Question A2)

Question A2 asked whether agencies periodically review Section 107 designation status. The intent was to determine if State and local agencies are responsive to changes in attainment status and if they use the Section 107 redesignation process in an appropriate manner. Auditors were to discuss the control agency's designation procedures and pending submittals.

Seventy-five percent of the audited agencies indicated that, from time to time, they did review how air quality data affected Section 107 attainment status, although not all of these agencies had actually submitted requests for redesignations during the review period. Although this review covers redesignations to nonattainment from attainment and vice versa for both primary and secondary standards, several agencies saw no incentive for designating new nonattainment areas.

Some control agencies sought EPA Regional Office technical review prior to submitting a redesignation request, however, some agencies preferred to resolve redesignation problems (especially changes from attainment to nonattainment) on the State or local level with minimum EPA involvement. Four agencies indicated an annual review while one State agency indicated a quarterly review. The one State agency indicating the question was not applicable said they had attained the standards and therefore periodic review was unnecessary.

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*Percentages in this chapter may not add to 100 percent due to rounding.

Section 107 Redesignations

	Yes	No	NA[2]	CD[2]
A2 Does agency perform periodic review of Section 107 designations and submit proposed changes to EPA? (61 responses)	75%	20%	2%	3%

3. Special Studies (Question A3)

Question A3 asked if the control agencies used the results of special monitoring studies in their planning activities and whether these studies resulted in periodic updates of the SIP. The intent was to determine if the agency's program was capable of integrating air monitoring and planning functions and of adjusting the SIP data base to include results of new data. Auditors were to discuss who in the agency reviewed data from monitors other than the NAMS/SLAMS network, and to identify the extent to which special monitoring data is compared to data that the SIP is based upon. A "yes" response indicated that special studies were evaluated against the current information and some action was taken. Evaluation of some special studies may have resulted in revisions to SIP limits via permits or may have led to specific SIP revisions. Twenty-eight agencies reported taking some form of action on special study data when there was a conflict with the existing SIP data base. The three agencies reporting not taking action on conflicting data commented that special studies data are not normally evaluated.

Several States said that special monitoring data are reviewed and acted on in the same way as data from the NAMS/SLAMS network. Some agencies commented that special purpose monitoring is done to help determine attainment status in an area not covered by existing monitors (e.g., localized problem spots for CO or TSP). In some agencies, new source modeling was performed that showed exceedances from existing sources. This sometimes resulted in more stringent emissions limits in the permits for the existing sources.

Although these examples and others indicated that action on the State level occurred as a result of special study monitoring, it could not be determined in all cases whether EPA was involved through submittal of a SIP revision or if such action was confined to emissions limit modifications on the local or State level.

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[2] NA means "not applicable." CD means "cannot determine," i.e., the explanation provided in the response was inadequate to determine a category for the answer.

Special Studies

		Yes	No	NA	CD
A3 Does agency update the SIP when special studies conflict with current information?		46%	5%	39%	10%
	Agencies	28	3	24	6

4. Air Management/Planning (Question A4, A4a, and A4b)

Question A4 asked how the control agency used air quality data in focusing its resources and establishing program priorities. The intent was to determine how the agency used air quality data (and modeling results) for program planning and management. Auditors were to review the agency's capabilities and experience in the use and evaluation of air quality data. In particular, agencies were to describe how they use data to: (1) direct and focus their compliance efforts e.g., for sources not meeting emissions limits; (2) determine program priorities e.g., on a geographic basis; or (3) identify regulations that are inadequate to maintain ambient standards. Formal methods, plans, and criteria used by the control agencies in these activities were to be identified.

Question A4 can be broken into four parts. For the first part, results indicate that 84 percent of the agencies review and evaluate monitoring data to focus on sources or source categories. These monitoring activities are varied. They range from analysis of existing network data such as microscopy filter analysis for metals from suspected sources or identification of fugitive TSP sources, to special purpose monitoring, such as CO or NO_x monitoring around airports and other congested areas. Many agencies evaluate existing monitoring data in support of compliance efforts or complaint investigations.

The second part of question A4 asked how modeling studies are used to focus on sources. Modeling studies are used by several agencies to site monitoring stations (e.g., SO_2 and lead monitors) or to assess the impact of proposed stationary and indirect sources in areas without monitors. Examples included: modeling impacts from nontraditional TSP sources such as road dust or woodburning, review of CO impacts from indirect sources such as shopping centers or parking lots, and modeling SO_2 impacts from power plants or industrial fuel-burning sources. Although this activity was performed by 66 percent of the audited agencies, there are a significant number of agency responses that could not be determined one way or the other.

The third part (Question A4A) was intended to determine if an agency used information on monitored exceedances in any formal way to revise program priorities, particularly on a geographic basis (i.e., to identify and control sources adjacent to ambient monitors). The question also asked agencies to give examples where this had been done and to describe how the results were used.

Many agencies cited examples in which they review exceedance data, or relate ambient trends to emissions trends. This type of activity is most frequent in areas with air quality levels at or slightly above the standards and which have a potential for or have received a recent SIP call.

However, the key word in the question was "formal," i.e., did the agency have some documented method or set procedure to govern program priorities or was the exceedance data handled informally? A majority of agencies do not use any formal procedure for this activity since only 34 percent answered yes. This is the only question in the group for which there are more negative than affirmative responses. There are also a significant number (20 percent) of "cannot determine" responses. Although the question was unclear, most agencies set program priorities based on evaluated air quality data, but they do this activity on an informal or as needed basis.

The fourth part (Question A4b) is intended to determine if some criteria or plan is established that directs agency attention to individual emissions sources or to specific source categories. Although it may seem to overlap with the first two parts of Question A4, it contains two distinguishing words: "criteria" and "plan." Activities under an affirmative answer could include: source/receptor analyses, such as analysis of atmospheric aerosols and the identification of their source; source oriented monitors, which are used to verify dispersion models that predict emissions reductions necessary to attain a standard; and any systematic review or program evaluation of air quality data. These activities were reported as occurring in only a few of the audited agencies.

Twenty-six agencies (43 percent) reportedly use some kind of plan or have established some criteria for relating ambient monitoring data to source activities. Almost as many, 24 agencies (39 percent), said that there were no documented criteria or plan established in their program. Two agencies (3 percent) indicated the question did not apply. Nine agencies (15 percent) gave unclear responses or did not answer the question.

Many agencies cited examples of special monitoring studies or reiterated studies given elsewhere in the audit. In deciding whether the responses were "yes" or "no", a certain amount of judgment was required to determine if an agency had established criteria or a plan for this activity. An affirmative answer was coded if the weight of the response indicated that there was probably a plan or criteria; otherwise the answer was coded "cannot determine" and lumped with those agencies which did not answer the question. A negative response meant either the agency did not relate source impacts to ambient data or that there probably was no plan or criteria involved.

Although the results indicate that most agencies do, in some way, relate source impacts to ambient data, there is in most agencies an absence of a formal program, criteria, or procedure to review air quality data and make the appropriate SIP planning corrections.

Air Management/Planning

	Yes	No	NA	CD
A4 Does the agency use monitored data to focus attention on emissions sources or source categories?	84%	10%	1%	6%
Does the agency use modeling studies to focus attention on emissions sources or source categories?	66%	11%	2%	21%
A4A Does the agency have a formal way to determine geographic program priorities using statistics on the frequency and severity of NAAQS exceedances?	34%	43%	3%	20%
A4B Does the agency have a criteria/plan for relating source impacts to ambient data?	43%	39%	3%	15%

D. EMISSIONS INVENTORIES

This section contains detailed audit information on how the State and local control agencies maintain emissions inventories for point, area, and mobile sources. It covers several aspects of the inventory including: sources, emissions and other data maintained (Questions B1 thru B4 and B9); frequency of updates (B5); documentation, methodology and quality assurance checks (B6, B7, B8, B10); and computerization, report formats and NEDS submittals (B11 thru B15). The majority are survey questions, but some (such as B10) are designed to help determine the quality of the inventory.

Sixty-three agencies provided audit responses to this section of the Air Quality Planning and SIP Activities chapter, as opposed to 61 agencies that responded to the other sections.

Responses to Individual Questions

1. Source, Emissions and Other Data Maintained in Inventory (Questions B1 thru B4 and B9)

Question B1 asked agencies to identify specific data categories (such as stack parameters, process data, etc.) maintained in its emissions inventory, and to describe its definition of major and regulated minor sources. This question, in combination with questions B2 and B3, was intended to determine whether components of the inventory include all significant source contributors to the pollutant burden. Except for one State and one Territory, all agencies reported maintaining criteria pollutant inventories for major point sources of State/local interest. There were variations among programs in the definition of a major source; most used 100 tons per year (TPY) potential but four reported using 100 TPY actual. Some agencies inventory only one or two pollutants that are of interest to them.

State agencies with no urban areas usually inventory only TSP and SO_2 emissions sources.

Some agencies store their inventory in compliance, inspection, or permit files. This storage method is apparently used most often for NSPS or NESHAP sources. The NESHAP inventory for many agencies is not computerized and may contain only survey or compliance data and sometimes covers only asbestos sources. One agency reported a cutoff level of 100 TPY for NESHAP sources, (it could not be determined if the emissions were actual or allowable). In general, most agencies maintain an inventory of emissions and related data for major sources, but coverage could be improved.

Question B2 covers the unregulated minor sources and area source (including mobile sources) inventory in nonattainment areas. In general, the audit revealed that States that are nonattainment for ozone maintain area source inventories for VOC since these are major contributors as a group. On the other hand, States with mostly rural (and few nonattainment) areas do not maintain area source inventories. The results showed that the mostly rural western States did not normally maintain area source inventories whereas the industrialized midwestern and northeasten States did. However, a populous State in the northeast did not maintain area source inventories, because it claimed that its resources were inadequate to inventory the large number of area sources. Altogether about half (52 percent) of the agencies maintain emissions inventories for area sources and unregulated minor point sources.

Question B3 was asked to determine how agencies handled small point sources, such as those below a set cutoff level. The purpose of the question was to determine if agencies treated these small point sources as individual sources or if they aggregated them into area sources, and if so, how? The intent of the question was to determine if all sources are accounted for and to investigate potential double counting of small point sources and area sources.

This question was apparently confusing. Twenty-one percent of the agencies did not respond or answer clearly. Although fifty-two percent said that they maintained unregulated minor source and/or area source inventories (Question B2), only thirty-five percent said in this question that they aggregated small point sources as area sources. It could not be determined from the responses how those agencies that do not aggregate handle small point sources.

Generally, those agencies that aggregated used a two-part approach. If the source category was subject to agency regulation, (e.g., power plants or industrial facilities) the agency aggregated sources below a cutoff and treated them as area sources. On the other hand, if the source category was unregulated (e.g., commercial surface coating or small gas/oil boilers) and emissions were derived from activity indicators such as population or fuel use surveys, then the aggregate subtracted any large sources above a cutoff from the total to obtain a remainder which they treated as area source emissions. Many agencies with a negative response simply said that their cutoff level was low and therefore their inventory included all small sources in the point source emissions inventory (EI).

Question B4 was intended to discover: (1) who was responsible for maintaining the mobile source inventory, and (2) what methods and models were used. It was hoped that the responses would reveal whether mobile source inventories could be used with a reasonable level of confidence for planning purposes.

There were some problems with this question, however. Most (52 of 63) of the audited agencies were not always responsible for mobile source inventories. Many States left development of mobile source inventories to either the State Department of Transportation (DOT) or to the Metropolitan Planning Organization (MPO) for urban areas within the State. Therefore, one-third of the agencies said this question did not apply to them since they were not the responsible agency. This may present an accountability problem since such inventories are critical to any urban CO or O_3 control strategy.

Mobile source inventories are conceptually calculated from the product of two numbers: vehicle miles traveled (VMT) and a composite mobile emissions factor (grams per mile). Each of these are calculated from separate and usually complex models: VMT from a transportation planning model; and the composite emissions factor from an EPA modal model (such as Mobile 2 or Mobile 3). Almost all VMT numbers are generated via DOT's or MPO's, and many of these agencies also run the modal models.

Since the audit question asked: "How does your agency inventory mobile source emissions?" and many State agencies are not responsible for this, the results were unclear as to how mobile source inventories are done. However, half of the agencies did respond, even though the mobile inventory may have been done by another agency. From these responses, it was clear that the current or most recently used modal model[3] was Mobile 2, followed by Mobile 2.5. One or two agencies also employed Mobile 1 and Mobile 3.

Question B9 was a survey question intended to determine if an agency is capable of computing the difference between actual and allowable emissions rates. Two out of three agencies say they maintain both actual and allowable rates.

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[3] Mobile 1 was the EPA modal model developed in 1978 for CO, NMHC, and NO_x emissions estimates from mobile sources. It was updated as follows: Mobile 2--1980, Mobile 2.5--1981, Mobile 3--1984.

Data Maintained in Inventory

	Percentages of Agencies					
			Yes	No	NA	CD
B1 Maintain emissions inventory for:						
- major point sources			97	3	-	-
- NSPS sources			60	27	-	13
- NESHAP sources			56	35	3	6
B2 Maintain emissions inventory--unregulated minor/area sources			52	43	3	2
B3 Aggregate small point sources as area sources			35	33	11	21
	1	2	2.5	3	NA	CD
B4 Modal model last used to develop mobile source inventory (Mobile 1, 2, 2.5, or 3)	3	25	16	5	33	18
			Yes	No	NA	CD
B9 Does EI have both actual and allowable emissions data?			67	30	3	0

2. Frequency of Updates (Question B5)

Question B5 is a survey question on how often the inventory data are updated for criteria pollutants in attainment and nonattainment areas and for NESHAP sources. Agencies were asked to describe their procedures for updating the inventory and to state the update frequency in three areas: criteria pollutant sources in nonattainment areas, criteria pollutant sources in attainment areas, and NESHAP sources.

Almost all data for regulated point sources is updated through the source permitting, registration, or certification process, i.e., the inventory is updated when the source permit changes or expires. Sixty-five percent of the agencies mentioned an annual update for criteria pollutant sources in attainment and nonattainment areas. NESHAP sources were updated annually by the majority of agencies that maintain these data.

Many agencies (43 percent) also update the EI either continually or as changes occur, i.e., more frequently than once a year. Some mentioned a "threshold" change value, such as 15 percent increase or decrease in emissions levels, which would prompt the agency to update the inventory.

Area and mobile source inventories are updated much less frequently than point source inventories. Generally the most recent update for area and mobile sources was the last SIP baseline year: e.g., 1976 for the 1979 SIP; 1979 or 1980 for the 1982 SIP. However, some urban areas are updating these inventories annually or biannually. Other agencies indicated their intent to increase the update frequency for mobile and area sources.

Frequency of Updating the Inventory (Question B5)

	Percentages of Agencies				
	1 yr or less	2 yrs	3 yrs or more	NA	CD
Update frequency--Nonattainment areas	65	19	3	11	2
Update frequency--attainment areas	65	26	3	3	3
Update frequency--NESHAP	42	14	3	27	14
		Yes	No	NA	CD
Update as change occurs		43	3	3	51

3. Documentation, Methodology, and Quality Assurance (Questions B6, B7, B8, and B10)

Question B6 asked agencies to describe the methodology behind the emissions estimates contained in the point and area source EI's. The intent was to determine if there was completeness and uniformity among agencies in the calculation of emissions data.

Ninety-one percent of the agencies said they used EPA guidance to develop emissions inventories and that their source data are compiled in accordance with the most recent guidance. However, very little detail in support of these claims was provided by either the control agencies or in the EPA Regional Offices review. A typical response either simply said yes or indicated that AP-42 emissions factors were used. Although a few States reported there were no AP-42 emissions factors for some processes in their State (e.g., certain chemical operations, or the wood products industry), some States reported developing their own emissions factors for some of these sources.

Question B7 attempted to determine if transportation and population baseline and projection data used in the SIP (such as VMT and population) are consistent with DOT and MPO planning data. Altogether, two-thirds of the agencies said the figures were consistent with other transportation data. Some of the agencies reported that population growth rates did not comport with Section 208 water project estimates but were consistent with the 1980 census and projections (to 1987 for example) based on that census. Since MPO's and DOT's are often responsible for generating these data, there usually are no inconsistencies of these data with other transportation data.

Question B8 sought to determine whether the basic input data (such as fuel use, production rates, emissions test data, traffic counts, population, etc.) and the calculation methods (such as emissions factors, control efficiencies, VOC reactivity conversion, etc.) were sufficiently documented and available. The intent was to find out if the accuracy and appropriateness of the agency's approach could be verified. Agencies were expected to produce calculation sheets, test reports, traffic counts, source reports, and other documents. It is not surprising that 84 percent said there was adequate documentation; however, only one agency (2 percent) said there was insufficient documentation. For seven agencies (11 percent), it could not be determined if adequate documentation existed. Combining the latter two groups indicates that 13 percent of the agencies either do not document or could not show adequate documentation.

Question B10 was a survey on the basic quality assurance (QA) methods used to check the accuracy of the inventory. Auditors were to determine what kind of QA measures were used and to review QA manuals and other documents. In practice, the question asked agencies to indicate if they use three procedures in particular: validity checks, checks for missing sources, and a comparison of inventory data to enforcement, planning, NSR, or other permit records. The audit asked the agency to briefly explain its validity checks and missing source checks.

Eighty-four percent of the agencies perform validity checks but the type of checks varied. Agency comments indicated that validity checks included: computerized gross limit checks for extreme data entries (such as an outrageous emissions rate of 10,000 TPY for a small boiler); comparisons to previous year records for the same source (e.g., has the data changed significantly and if so, what is the reason?); and some types of review or spot-checks by staff or supervisor. Almost any kinds of crosschecks were included in the "yes" category. This being the case, it is noteworthy that at least 10 percent (six agencies) did not report using any type of validity checks.

Checks for missing sources are performed by 76 percent of the agencies. These include: comparison of sources in the inventory with industrial listings, RACT source category lists and the telephone yellow pages, discovery of sources, especially those with visible plumes, through field surveillances and complaint investigations; and cross-checking building permit logs or zoning dockets. Even though most agencies check for missing sources, many apparently believe their inventory is comprehensive (due to a low cutoff level or extensive source registration) and therefore the inventory has a low probability of missing sources.

Comparison of inventory data to enforcement, planning, new source review (NSR), or permit records is done by 71 percent of the agencies. Among these four areas of comparison, most agencies commented that permits or enforcement were the usual areas of comparison. This is not surprising since many agencies update the inventory on or near the expiration date of the permit. However, 21 percent said that no comparison was performed.

Documentation, Methodology, and Quality Assurance

	Percentages of Agencies			
	Yes	No	NA	CD
B6 EI consistent with EPA guidance	91	3	3	3
B7 Transportation data consistent with DOT, MPO, data, or with Section 208 water quality projections	67	3	22	8
B8 EI adequately documented	84	2	3	11
B10 EI has some validity checks	84	10	3	3
B10 EI checked for missing sources	76	18	3	3
B10 EI compared with enforcement, planning, NSR, and permits	71	21	3	5

4. Computerization, Report Formats, and NEDS Submittals (Questions B11 to B15)

Question B11 is a survey on whether the emissions inventory is stored on computer. Auditors were to review printouts of the inventory and other documents. Eighty-one percent of the agencies indicated their inventories were computerized; 18 percent said they were not computerized. While some agencies have created individual inventory systems, many use the EPA EIS system.

Question B12 is a survey on what kinds of inventory reports are available, specifically in four areas: aggregation by various source categories, aggregation by various geographic units, effects of changes in control measures or process modifications on the inventory, and annual submittal of inventory in NEDS format, to meet EPA reporting requirements. This survey question is intended to determine the extent of use of emissions inventory data in plan evaluation, resource allocation, and control strategy development.

In the first area, 76 percent of all audited agencies can or do aggregate the inventory by source category; 15 percent cannot or do not aggregate by category. Normally, emissions inventory systems are able to sort by standard category codes such as standard industrial classification (SIC) or source classification code (SCS). The SIC's are general manufacturing categories, but SCC's are more useful for inventories, being more specific to air pollution sources. A typical SCC, for example, may indicate the size and fuel type of an industrial boiler. Although most agencies' inventory systems are generally able to aggregate and rank actual emissions in each SIC or SCC category, more elaborate systems could report aggregated data such as allowable emissions, production rates and fuel use.

In the second area, 74 percent of all agencies audited indicated an ability to aggregate by geographical unit, (i.e., by county or perhaps census tract). Fifteen percent said they could not do this. Most agencies provided little detailed explanation beyond a simple "yes" answer. Therefore, it was not clear exactly what kind of aggregation was available.

In the third area, agencies were asked if they could produce a report summarizing the effects of source controls or process changes which might be useful for regulation evaluation or RFP tracking. Forty-one percent of the agencies indicated such a report could be generated, and the same number reported they could not generate such a report. This report implies the ability of the agencies to compare current year emissions records to a previous year and to subtract year from year for individual points where changes in emissions control devices or pollutant generating processes have occurred. It is doubtful that all of the agencies would use computers in producing such a report but it is more likely that this report is done by hand, and only for special purposes. Although 41 percent said this type of report was not available, most agencies appear to maintain sufficient point source data on types of control equipment, efficiencies, process descriptions, etc.

The last part of the question asked if the national emissions data system (NEDS) submittals to EPA were made annually. Seventy-three percent of the agencies said NEDS were submitted annually, 13 percent said they were not, and 10 percent did not answer the question. Of the three agencies indicating that this question was not applicable, two were local agencies not responsible for submitting NEDS (the State agency does this for the local agency in most cases). Readers are referred to question B15 for the reported date of the last NEDS submittal to EPA.

Question B13 asked if the inventory provided temporal (daily or seasonal variation) and spatial (county, census tract, gridded area, etc.) resolution for use in SIP analyses and related modeling activities. Auditors were asked to review output sheets and other planning documents. If the inventory cannot provide information in this area, it is considered inadequate. For eighty-two percent of the agencies, inventories were reported to be adequate for these purposes. For 11 percent, the inventories were reportedly inadequate; for 2 percent, the question was not applicable; and in 5 percent, the response could not be determined. Most agencies apparently do not keep a separate file of modeling data, however, they generate this by hand when needed (e.g., input data to the EKMA/OZIPP day-specific ozone model). Typical inventory report results are in annual emissions rates. For VOC emissions, the results are usually in total VOC instead of reactive VOC. Therefore, conversion to daily reactive units for VOC, and daily or hourly units for TSP, SO_2 is usually necessary for modeling activities.

Several agencies indicated an ability to produce summary reports of not only emissions rates, but throughputs (production rates) and workshifts on a quarterly, weekly, or daily basis. The majority of agencies, however, do not record this level of detail, at least not on a routine basis.

Question B14 asked whether the inventory was compatible with requirements to track and demonstrate reasonable further progress (RFP). It was expected that RFP methods would vary widely, but the emissions inventory maintained by the agency should have sufficient capabilities, especially with respect to periodic updating, to support RFP efforts. Auditors were to review the RFP reports and inventory outputs.

A key element for RFP tracking is periodic updating of the inventory. Sixty-five percent of the agencies reported annual (and another 19 percent reported biannual) updating of the emissions inventory in nonattainment areas (Question B5). Therefore, although the majority of agencies seem to be updating the point source inventory, it is unclear whether the area and mobile source inventories, which are major contributors to ozone and CO, are also being updated as frequently. Although 75 percent of the agencies indicated that their inventories were compatible with RFP needs, a few States did recognize that a lack of annual emissions updating was a problem for the purposes of tracking RFP. Other States commented that RFP tracking was done manually, particularly for area sources, or that they felt their system was capable of tracking RFP but had not been proven. It is noteworthy that only 8 percent of the agencies apparently felt that their inventories were not compatible with RFP.

The last question, B15 (which asked when the last NEDS submittal was made), was an afterthought to Question B12 on whether annual NEDS submittals were made. Eleven percent indicated 1984 and 55 percent said 1983 was the most recent submittal. Several States indicated either 1982 or 1981 and prior submittal dates. States with old submittal dates even reported that they submitted NEDS annually.

Computerization, Reports Format, and NEDS Submittals

	Percentages of Agencies			
	Yes	No	NA	CD
B11 EI on computer	81	18	2	0
B12-Aggregate by source category	76	15	3	6
-Aggregate by geographic unit	74	15	5	6
-Summarize control/change impacts	41	41	2	16
-Submit NEDS annually	73	13	5	10
B13 Inventory adequate for SIP modeling	82	11	2	5
B14 Inventory compatible with RFP	75	8	11	6

	84	83	82	81 and prior	NA	CD
B15 Date of last NEDS submittal	11	55	10	10	10	4

E. MODELING

This section contains detailed audit information on the air quality modeling abilities of State and local agencies. The intent of the audit was to determine the degree of consistency among control agencies with respect to using models, following EPA guidance, and communicating with EPA Regional Offices.

Three areas are covered: (1) the staff's knowledge and capabilities with regard to modeling (Questions C1, C3, C6, C9, and C11); (2) documentation and guidance (Questions C4, C5, and C10); and (3) agency review of outside modeling analyses (Questions C2, C7, and C8).

In the first area, the agencies are audited on their staff's modeling experience and training, the kinds of models and data bases available, the use of current modeling practices, and the staff's familiarity with the Clean Air Act requirements and EPA policy.

The second area covers whether or not the control agency deviates from the EPA Modeling Guideline, and if so, whether such deviation is documented. The audit also attempted to determine if: the agency contacts EPA prior to using nonreference procedures and whether it documents the communication; and whether the agency provides modeling guidance to sources or consultants prior to their application of models.

The last area covers the agency's review of outside modeling analyses (by sources or contractors), if it is replicated by the agency staff, and if the agency has participated in site-specific model evaluation studies.

Responses to Individual Questions

1. Knowledge and Capabilities (Questions C1, C3, C6, C9, and C11)

Question C1 was asked to determine the staff's level of experience with using air quality models (particularly EPA guideline models). The intent was to find out if the agency was capable of conducting modeling analyses and reviewing those done by others. Auditors were to review the agency's modeling staff with respect to: meteorological background, adequate staffing, and computer training. State and local agencies were to describe their modeling staff and their experience with EPA reference models.

The responses were classified in three categories of knowledge and capability. Advanced knowledge meant the agency had extensive experience in the application of EPA models and an ability to evaluate nonguideline models. Basic knowledge implies that the agency has the capability of using most EPA models but is not able to evaluate nonguideline models. Agencies that can use only screening models or do not have basic knowledge are classified as "limited or none" (i.e., not familiar with all or most EPA models).

Five agencies (8 percent) indicated levels of modeling experience associated with an advanced knowledge capability. These agencies are capable of performing sophisticated, nonreference modeling and, in some cases, have developed their own models. Thirty-seven agencies (61 percent) indicated a basic level of modeling knowledge, 14 agencies (23 percent) indicated that their level of modeling capability was limited to EPA screening models or that expertise on using the full range of EPA models was limited or did not exist. The answer for another five agencies (8 percent) could not be clearly determined.

A further breakdown of the 14 agencies with less than basic knowledge was interesting. Their responses to questions C2, C3, and C7 revealed that nine of these agencies reported having in-house access to models and data bases, nine reviewed source or contractor's modeling analyses in 1983, three verified or replicated analyses performed by sources or contractors and two reported performing most or all of their own modeling. In addition, five agencies reported contacting EPA before using any nonreference procedures, but only one agency said that they maintained documentation of such contact, and another of these agencies reported neither contacting EPA nor documenting the fact.

The second part of question C1 asked agencies to identify the percentages of different types of modeling analyses performed "in-house" versus "outside" by source or contractor. In general, the responses did not indicate in sufficient detail what types of modeling were performed by whom, nor was it possible in all cases to determine whether an overall percentage of modeling was performed in-house or by sources other than the agency. The results, therefore, are classified only as to whether most modeling is done by the agency or by a source or contractor. The modeling mix was 40 percent in-house, 30 percent outside, and 30 percent unknown or no response.

Question C3 asked agencies to describe their access to EPA and other models, meteorological data, and emissions data bases. The intent was to determine if the agency had adequate resources, including computer capabilities, to conduct or review modeling studies. Agencies were to provide a list of models, data bases and other data requested by the auditors who were to evaluate the available resources with respect to the demands of the required studies.

Fifty-one agencies (83 percent) responded that they maintain in-house access to models and data bases, seven agencies (12 percent) do not, and three agencies (5 percent) did not respond. Several agencies indicated that their in-house models included only screening types.

Of the 28 agencies indicating which version of the EPA UNAMAP model series were available to them, 15 reported using version 5, 9 use version 4, 3 use version 3, and 1 uses version 1. A few agencies commented that version 5 of the UNAMAP model series was on order. The remaining 33 agencies did not give enough detail to allow a determination of which version they used.

Question C6 asked whether the agency kept abreast of changing modeling guidance. Fifty agencies (82 percent) responded that they kept abreast of the latest guidance, but gave few details in their comments to this question. Seven agencies reported not keeping up with current guidance.

Question C9 asked if the agency modeling staff was familiar with Section 110, Section 107, and Part D requirements of the Clean Air Act (for SIP's, redesignations, and ozone/CO extension areas, respectively) which prompt modeling analyses.

Forty-seven agencies (77 percent) responded that their modeling staffs were familiar with most of these requirements. Eight agencies (13 percent) indicated they were not familiar with one or more of these requirements. Four agencies (7 percent) reported the question was not applicable to them and two agencies did not respond. Four of the eight agencies reporting that they were not familiar with some of these requirements were State or local agencies with Part D SIP's.

Question C11 asked if the agency staff was familiar with modeling and control strategy requirements for bubbles, redesignations, new source review (NSR), and nonattainment areas. There was some overlap of this question with question C5 with respect to Section 107 redesignation requirements.

Forty-three agencies (70 percent) indicated that their staff was familiar with most of these requirements. Fourteen agencies (23 percent) reported that their staff was either partly or totally not familiar with one or more of these requirements. Two agencies reported these requirements did not apply (one was a local agency that deferred to its State agency and the other was a rural State), and two agencies did not respond.

Modeling Knowledge and Capabilities

		Advanced Knowledge	Basic Knowledge	Limited Or None	CD
C1 Does staff have experience and knowledge using EPA air quality models?	Agencies	5	37	14	5
		8%	61%	23%	8%

	In-House	Outside	CD
C1 Are most modeling analyses performed by agency (in-house) or by contractor/source (outside)?	40%	30%	30%

		Yes	No	CD
C3. Does agency have in-house access to EPA models and other data?	Agencies	51 83%	7 12%	3 5%

		UNAMAP Version				
		5	4	3	1	CD
C3. Which version of EPA UNAMAP?	Agencies	15	9	3	1	33

		Yes	No	NA	CD
C6. Does agency staff keep abreast of changing modeling guidance?	Agencies	50 82%	7 11%	3 5%	1 2%
C9. Is the agency staff familiar with Sections 110, 107, and Part D modeling requirements?	Agencies	47 77%	8 13%	4 7%	2 3%
C11. Is agency staff familiar with modeling requirements for bubbles, redesignations, NSR, and nonattainemnt areas?	Agencies	43 70%	14 23%	2 3%	2 3%

2. Documentation and Procedures (Questions C4, C5, and C10)

The first part of question C4 asked if a review of the documentation supporting the modeling analyses performed by the agency could easily verify that EPA procedures were followed. The intent was to determine if modeling analyses performed by State and local agencies were consistent with national guidance. Auditors were to review several of the agencies' modeling analyses or reviews of modeling by others and to evaluate the thoroughness and consistency of the supporting documentation. Auditors were to note systematic differences between EPA recommendations and agency practices.

Forty-three agencies (71 percent) reported that they have documentation available showing that EPA modeling guidelines and procedures are routinely followed. Four agencies (7 percent) indicated that such documentation was not routinely available. Six agencies said the question was not applicable to them either because they do no modeling or there is never any deviation from EPA procedures, thereby implying that documentation of such nondeviation would be unnecessary. The remaining eight agencies did not clearly answer the question.

The second part of question C4 asked agencies if any deviations from EPA modeling procedures or guidelines were clearly documented and supported. Twenty-three agencies (38 percent) replied that they did have clear documentation and support where they deviated from EPA procedures and guidelines on models. Almost as many, 22 agencies (36 percent), reported that the question did not apply since they did not deviate from EPA guidance. Four agencies (7 percent) indicated that not all cases were clearly documented. The remaining 12 agencies (20 percent) did not clearly respond either way to the question.

Question C5 explored the area of communication between modeling staffs of State and local agencies and the EPA Regional Offices. The question asked whether the agency routinely contacts EPA for approval prior to implementing nonreference procedures and whether such contact is documented. Auditors were to discuss with the agency modeling staff several modeling analyses and to evaluate the agency's early coordination with EPA and any documentation where nonreference procedures were used.

Thirty-two agencies (53 percent) indicated that EPA was routinely contacted for approval prior to using nonreference modeling procedures. Three agencies (5 percent) reported not contacting EPA either routinely or prior to the fact. Twenty-four agencies (39 percent) responded that they never use nonreference procedures and therefore the question was not applicable, and two agencies did not answer the question.

A second part of the question asked if the above contact of EPA by the agency prior to using nonreference procedures was documented. Of the 32 agencies that reported making such contact, 19 indicated that they kept documentation of it, 7 did not and 6 did not respond clearly either way.

Question C10 asked if the agency provided modeling guidance to sources or consultants prior to their performing analyses. The intent of the question was to determine if guidance was being distributed before the modeling began and to survey whether agencies generally are providing guidance to sources or contractors.

Fifty-two agencies (85 percent) reported that guidance was provided prior to modeling. Only two agencies indicated that guidance was not provided. Four agencies responded that the question was not applicable, presumably because there was no outside modeling performed, and three agencies did not answer the question.

Documentation and Procedures

		Yes	No	NA	CD
C4 Is documentation available to show that agency routinely follows EPA modeling guidelines and procedures?	Agencies	43 71%	4 7%	6 10%	8 13%
C4 Are deviations from EPA procedures and guidelines clearly documented and supported?	Agencies	23 38%	4 7%	22 36%	12 20%
C5 Does agency contact EPA for approval prior to using nonreference procedures?	Agencies	32 53%	3 5%	24 39%	2 3%
C5 Does agency keep documentation of such contact with EPA?	Agencies	19 31%	7 11%	23 38%	12 20%

		Yes	No	NA	CD
C10 Does agency provide guidance to sources or contractors prior to initiation of modeling?	Agencies	52 85%	2 3%	4 6%	3 5%

3. Agency Review of "Outside" Modeling Analyses (Questions C2, C7, and C8)

Question C2 asked agencies to provide a list or an estimate of the types and number of modeling analyses performed by sources or contractors that were reviewed by the agency during FY 1983. The intent was to determine if the staff is capable of performing all required analyses in a timely manner. Auditors were to evaluate whether all SIP requirements were met and if the agency staff allowed enough time for a thorough review of these analyses.

Forty-five agencies (74 percent) reported that some modeling analyses performed by a source or its contractor were reviewed by the agency in FY 83. Ten agencies (16 percent) did not report reviewing any such analyses and six agencies (10 percent) did not answer the question. Altogether, 48 agencies reported reviewing about 500 modeling analyses by sources or contractors in FY 83; however, the responses did not include enough detail to allow the mix of these to be determined.

In a related area, question C7 inquired if the agency verified or replicated modeling analyses performed by sources or their contractors, i.e., how thorough was the review performed by the agency on outside analyses? Perhaps because of the way in which it was asked, it did not elicit a significant amount of detail from the State and local agencies. For example, it did not ask what kinds of modeling analyses the agencies verified nor did it try to determine the depth of verification employed by the reviewing agency.

In general, 39 agencies (64 percent) responded that some outside analyses did receive some kind of verification by their modeling staff. From their comments, the agencies indicated that 18 of the 39 replicated all outside modeling, 9 verified only if the modeling analyses was marginal or had a potential for an exceedance of the standard, 8 used only screening models in their verification, and 4 were not specific as to how they performed this verification. Thirteen agencies (21 percent) reported that they performed no verifications. Five agencies said there was no outside modeling performed that required verification, and 4 agencies did not answer the question.

Question C8 was a survey on whether agencies had participated in site-specific model evaluation studies.

Seventeen agencies (28 percent) reported participating in site-specific modeling evaluation studies, seven of which occurred within the last year. Four agencies (7 percent) did not participate in such studies when they occurred. Twenty-two agencies (44 percent) indicated that no such studies had been done, and 13 agencies (21 percent) did not clearly answer the question. This large number of unclear responses indicates the question may have not been understood by a significant number of agencies.

Agency Review of "Outside" Modeling Analyses

		Yes	No	NA	CD
C2 Did the agency review source or contractor-performed modeling in FY 83?	Agencies	45	10		6
		74%	16%		10%
C7 Does the agency verify or replicate modeling analyses performed by sources or contractors?	Agencies	39	13	5	4
		64%	21%	8%	7%
C8 Has agency participated in site-specific model evaluation studies?	Agencies	17	4	22	13
		28%	7%	44%	21%

F. SIP EVALUATION AND IMPLEMENTATION

This section contains detailed audit information on the periodic evaluation and implementation activities related to the State implementation plan (SIP) at the State and local levels. The 1984 audit focused on several broad areas: timeliness of studies and regulation development (Questions D1, D2, D6, and D10); familiarity with EPA policy on site-specific SIP revisions (Question D3); inspection and maintenance (I/M) and transportation control measures (TCM's) implementation (Questions D4 and D5); and SIP coordination and validation (Questions D7, D8, and D9).

The first area, timeliness of studies and regulation development, is intended to discover any obstacles in the development of major regulations such as reasonably available control technology (RACT) for volatile organic compounds (VOC's) or Section 111(d) rules and whether or not major study efforts or schedules for rule adoption were included in the SIP. Auditors were to identify any generic problems or innovative approaches and to discuss progress on schedules or studies due during FY 83. There is also a review of progress on outstanding SIP deficiencies identified by the Regional Office.

The second area covers site-specific SIP revisions such as variances, bubbles and emissions trading, and whether or not the State or local agency's handling of these is consistent with EPA policy. Auditors were to review agency files and reference documents in this area.

The third area discusses I/M and TCM implementation problems and asks agencies to identify their tracking processes and responsibilities. A brief discussion of I/M program elements is also covered.

The last area, SIP coordination and validation, covers RFP tracking, substantiation of emissions reductions claimed in the SIP, and growth estimate reevaluation.

1. Timeliness of Studies and Regulation Development (Questions D1, D2, D6, and D10.

Question D1 asked whether all required regulations had been adopted and submitted to EPA or if progress toward submittal was being made. The intent was to identify any obstacles to the development of major regulations, such as VOC RACT rules required under Part D or Section 111(d) rules. Auditors were to identify and discuss any submittals due during the review period.

Fifteen agencies (25 percent) reported that all regulations had been submitted. Another 33 agencies (54 percent) indicated that not all had been submitted but were in progress. Four agencies (7 percent) said that progress had not been made on required submittals--mostly the submittals were incomplete, but in one case, a 111(d) plan was long overdue. Responses of the remaining 9 agencies (14 percent) were either not applicable, unclear, or not given.

In the category of overdue submittals in progress, the most typical types of rules were (in descending order): 111(d) plans, CTG rules (RACT, Stage I, floating roof regulations, etc.); lead SIP's; TSP and secondary TSP rules (including wood burning); and I/M rules.

The time frames of each of these categories is unclear from the responses, i.e., it is not possible to determine which of the required rules have longer submittal times than others. A tentative conclusion, based on a few States' comments, is that resources are the limiting factor. Yet a large southwestern State agency had no submittals outstanding in FY 1984. Several States indicated that lengthy legislative oversight requirements delayed submittal of rules.

Question D2 dealt with whether studies required in the SIP had been completed. The intent was to cover major study efforts such as nontraditional TSP sources or CO hotspot studies. Auditors were to review and discuss a list of major studies due during FY 1983 and evaluate their status.

Generally, the agencies have either completed their required studies (27 agencies or 44 percent have), or there were no studies required or due during the FY 1983 reporting period (26 agencies, or 43 percent, were in this category). Six agencies were not doing studies where required, however five of these involved TSP or nontraditional TSP studies which the agencies had placed on hold due to EPA's reevaluation of the PM_{10} standard. The other agency commented that an I/M and tampering study was delayed due to inaction by an outside agency. Two agencies did not reply to the question.

Most of the completed studies were for one or more of the following: CO hotspot analyses, TCM's or nontraditional TSP (e.g., street-sweeping, wood burning, fugitive dust, etc.).

Question D6 asked what agencies do to assure that schedules for adoption and implementation of rules are satisfied. This question was intended to see if agencies attempt to: minimize unnecessary slippages in the schedule; maintain reasonable further progress (RFP); and adopt and implement required rules on a schedule consistent with the attainment deadline. Auditors were to review outstanding Part D conditions, SIP approvals containing "with the understanding" clauses and any schedules for rule adoption or implementation contained in the 1982 ozone/carbon monoxide SIP's. Agencies were to identify who, in-house, was responsible for tracking schedules and the major causes for any slippage in the schedules.

Twenty-one of the 61 agencies indicated that schedules were contained in the Part D SIP's. Twenty agencies said there were no SIP schedules, 11 agencies had no Part D SIP's, and answers for the remaining nine agencies were unclear or not given. Therefore, the question currently applies to about one-third of the 61 audited agencies. One of these agencies identified delays in adopting non-CTG RACT rules because of problems in identifying sources subject to the rules. Another identified slippages in VOC RACT schedules such as automobile and light truck surface coating, miscellaneous metal parts and paper, vinyl, and fabrics facilities. However, there were only three agencies that indicated any slippages in schedules. Most agencies did not indicate who is responsible or how they track schedules. The few that did, indicated incorporating the schedules as Section 105 grant conditions, including them in a work plan, or setting up an "event schedule" for tracking schedules.

Question D10 asked EPA Regional Offices to identify SIP deficiencies for which States and local agencies would indicate whether submittals were in progress. The intent was to determine if resolution of differences between State/local agencies and EPA Regional Offices could be more promptly resolved or with less friction. Auditors were to determine if priority problems were receiving appropriate attention or if agencies had a plan for resolution of identified deficiencies.

Twenty-seven agencies (44%) indicated some kind of SIP deficiency existed and that progress toward resolution was being made. Five types of deficiencies were listed for five or more agencies. These covered the following areas: I/M; TSP (iron and steel sources, fugitive sources, woodburning, etc.); administrative (permit fees, board composition, malfunction reporting, etc.); O_3 SIP-related (attainment demonstration, rule adoption); and new source review (PSD, offset rules, etc.). A few agencies (3 or less) identified other deficient areas, such as: CO SIP's, SO_2 rules, lead SIP's, and stack height regulations.

Three agencies replied that resolution of deficiencies was not in progress at the time of the audit. One agency was deficient in new source review (NSR) for which work was in progress but submittal was delayed. The same agency reported a SIP modeling guideline was late and there was no set schedule for its submittal. Another agency reported differences with the Regional Office on the VOC reduction target and asked EPA for clarification. The third agency must adopt locally enforceable rules and attributed not having done so to personnel shortages.

Twenty-two agencies (36 percent) reported that no deficiencies were identified and nine agencies (15%) did not give a clear response.

Timeliness of Studies and Regulation Development

	All submitted	In Progress	Yes	No	NA	CD
Agencies	15	33		4	7	2
D1 Have SIP regulations or emissions limits been submitted or, if not, is progress being made?	25%	54%		7%	11%	3%
D2 Has agency carried out additional studies where required by the SIP?			44%	10%	43%	3%
D6 Does the agency have schedules in the SIP for adoption or implementation of Part D rules?			34%	33%	18%	15%
D10 Is agency making progress on identified SIP deficiencies?		Agencies	27	3	22	9
			44%	5%	36%	15%

2. Familiarity with EPA Policy on Site-Specific SIP Revisions (Question D3)

Question D3 explores the area of variances, bubbles, emissions trading, and other site-specific SIP revisions. The question was intended to discover if the agency understood and followed EPA policies on these SIP revision topics. Auditors were to review agency notebooks and files to see if they were complete and up to date, and discuss any pending site-specific SIP revisions. If problems existed, auditors were to try to find their origin.

Thirty-one agencies (51 percent) reported that they are able to show that their site-specific SIP revisions have been consistent with EPA policy. About half of these (15 agencies) said the mechanism used to assure consistency was review and comment by the EPA Regional Office. Others used permits, generic rules, or reviewed "guideline notebooks," etc., kept at the agency. Among the 31 agencies, bubbles and emissions trades are the most commonly occuring site-specific SIP revisions.

Ten agencies (16 percent) reported, or the Regional Office said, that some of their bubbles or variances were inconsistent with EPA policy. Of these, three agencies were calculating VOC allowable emissions on averaging times contrary to EPA policy, two agencies had bubbles that were found to be inconsistent with EPA policy, two agencies had variances not approved by EPA, and three other agencies' inconsistencies fell into miscellaneous categories.

The remaining 20 agencies, not in the above categories had either never employed bubbles, trades, or variances or did not provide a clear response to the question.

Familiarity With EPA Policy on Site-Specific SIP Revisions

	Yes	No	NA	CD
D3 Can agency assure that site-specific SIP revisions are consistent with EPA criteria?	51%	16%	13%	20%

	Permit	Generic Rule	EPA Review/ Comment	Other	NA	CD
D3 How does agency assure site-specific SIP revisions are consistent with EPA criteria?	11%	13%	30%	5%	18%	23%

3. Implementation of Inspection/Maintenance (I/M) Programs and Transportation Control Measures (TCM) (Question D4 and D5)

Question D4 deals with whether EPA-approved TCM's (i.e., contained in an approved SIP) are being implemented. The intent is to discover if the State or local agency, DOT, or MPO is responsible for tracking TCM's. Auditors were to review any SIP commitments to implement TCM's.

Thirty-eight agencies (63 percent) reported that TCM's were being implemented, but 17 indicated that responsibility for implementing and/or tracking these lie with other agencies, usually DOT's or MPO's. Even so, 19 agencies indicated tracking TCM's by receiving reports from various implementing agencies (e.g., DOT, transit company, city traffic department, Chamber of Commerce for ridesharing, etc.); eight agencies track TCM's via periodic review of the consistency of the transportation improvement plan (TIP) with the SIP (four of these agencies also monitor implementation by being members on an MPO transporation committee) and one agency relies mainly on on-site inspection of roadway improvements. It could not be determined from their responses how the other 10 agencies are involved in tracking TCM's.

In addition to the above 38 agencies, two agencies indicated that required TCM's were not being implemented. These and a few other agencies cited problems with enforceability of TCM's and the failure to meet stated goals, such as a certain percentage increase in transit ridership or improvement in ridesharing participation.

Of the remaining 21 agencies (34 percent), 19 are not required to implement TCM's and two did not clearly respond to the question.

Question D5 covered whether the SIP credits for the I/M program are being achieved. Auditors were to review operating I/M programs with respect to the ten elements required by EPA policy published in the January 22, 1981, Federal Register.

The I/M programs were required in 32 of the 61 audited agencies. At the time of audit (January to June 1984), less than half (14) of these programs had been in operation for 1 year or more and the others had either been in operation for less than a year or had not yet started.

Therefore, of the 32 required programs, only 7 agencies indicated that I/M was consistent with the SIP credits claimed and another five indicated having found problems of inconsistency with the I/M credits in the SIP (low failure rates, noncompliance/low participation rates or poor reporting). Three other agencies with I/M programs in operation for a year or longer gave unclear responses. For the remaining 17 agencies, the results indicated that they could not yet make this determination. (One of the three agencies had an I/M program in operation for more than 8 years. However, it could not be clearly determined from the audit response if the program was consistent with the SIP credits.)

In eight of the 32 areas, an agency other than the State or local control program, such as the State DOT, had primary responsibility for administering the I/M program.

I/M, TCM Implementation

D4 Where required, are TCM's being implemented?	Yes	No	NA	CD
	63%	3%	31%	3%
Agencies	38	2	19	2

D4 For TCM's, how does agency assure implementation?	Reporting by implementing agency	Agency member of MPO transp. committee	Other (TIP review on-site inspec., etc.)	NA	CD
	25%	7%	11%	41%	16%
Agencies	15	4	7	25	10

D5 For I/M, is implementation consistent with SIP credits?	Yes	No	NA	CD
	11%	8%	48%	33%
Agencies	7	5	29	20

D5 Length of I/M operation	Less than 1 year	1 year or more	Not yet in operation	NA
	10%	23%	21%	46%
Agencies	6	14	12	29

4. SIP Coordination and Validation (Questions D7, D8, and D9)

Question D7 attempted to find out if and how agencies track RFP for ozone and carbon monoxide in extension areas. This was basically a survey of the tracking approach used by State and local agencies. Auditors were to review the agencies' annual RFP report and to try to determine: (1) if the claimed reductions were adequately documented, (2) who was responsible for RFP tracking, and (3) how the RFP report was used in agency evaluation and planning activities.

Of the 26 agencies with ozone extension areas, 12 indicated a system was available to document VOC emissions reductions claimed in the ozone RFP demonstration. Seven agencies said they did not have a system to do this and the remaining seven did not give a clear answer either way. On the second part of the question, 13 agencies reported having the ability to assure that the VOC reductions (being tracked in the annual RFP reports) were consistent with current emissions inventory or enforcement data, but 7 said they could not do this and 6 did not answer the question either way.

Of the 34 agencies with extension areas for CO, 11 indicated that a system was available to document CO emissions reductions claimed in the CO RFP demonstration. However, 12 agencies said they did not have a system to do this, and the rest did not clearly answer. One State said it had not yet been required to submit RFP reports for its CO extension areas. Responses to the second part of the question were similar to the ozone part of question D7: 11 said they could assure consistency between CO emission reductions and inventory or enforcement data, 11 could not, and 12 did not respond clearly.

In general, RFP tracking for VOC point sources is based on the periodic updates of the VOC emissions inventory. If the inventory is updated annually, and the audit revealed that 65 percent of agencies in nonattainment areas performed annual updates, then current actual emissions can be compared to the RFP line to see if the reductions called for in the SIP strategies have been attained. However, most State or local agencies do not update area and mobile source emissions as frequently as point sources. Therefore, only part of the RFP reductions (the point sources) may be tracked for VOC. Only four State agencies reported annually tracking RFP for point, area, and mobile sources. A couple of these also plot air quality trends for ozone and compare to the emissions trend. A few States track air quality data instead of emissions. Others, citing insufficient resources, use surrogate numbers for the baseline data (e.g., using traffic count growth, instead of VMT growth generated from a transportation model). Several States requested additional guidance from EPA on RFP tracking, and a few were apparently delaying any kind of RFP tracking until EPA approved their 1982 O_3/CO SIP. One Regional Office suggested that RFP reports of some States had left out emissions from upsets, maintenance, and malfunctions, and had not included emissions reductions from shutdown or compliance by a source in advance of the scheduled due date.

The RFP picture is about the same on the CO side. The erratic updating of the mobile source inventories affects CO more than O_3. Not more than five agencies indicated that they documented changes in traffic patterns and adjusted VMT accordingly. The other five agencies claiming to use a "system" to document RFP reductions either track air quality data or monitor TCM implementation, but do not actually document mobile source emissions reductions.

Question D8 asked how the agencies are able to substantiate that the emissions reductions claimed in the SIP control strategy are actually achieved. The intent is to find out when and how initial compliance is determined by the agency for stationary source rules (such as Part D RACT for solvent coatings) and TCM implementation. Auditors were to coordinate this activity with the compliance audit. Current and planned activities were to be summarized.

Sixty-six percent (40 agencies) said that they could substantiate their SIP emissions reductions, 18 percent (11 agencies) said they could not, and the remainding responses were "not applicable" (no nonattainment areas) or "could not be determined." In keeping with the responses on the previous questions on RFP, the vast majority (34 of the 40 agencies) responded that stationary source activities, such as inspection, permitting, and/or testing (as opposed to area and mobile source activities) were the principal means of substantiating compliance with the control strategies. Several agencies also verified or monitored TCM implementation. The four agencies in the "other" category rely on some kind of source reporting when compliance schedules come due. In general, the level of detail in the responses was not sufficient to identify the quality associated with any of the three categories of verification methods.

One agency indicated that it required major TSP, SO_2, and VOC sources to perform stack tests every two years. Some agencies claimed to limit source growth to the allowance in the latest SIP via permit conditions. One Regional Office recommended that a State agency improve its documentation of SIP reductions and improve its verification of information submitted by the source. Few States reported making any attempt at verifying source reported compliance data. Although agencies may be doing such verification via routine source inspection and permitting, the audit could not confirm this.

Question D9 asked when and how the agency was planning to address changes in the SIP growth projections. The intent was to determine if there was any periodic review of the growth projections against current data. Auditors were to discuss data sources and any process used to update the projections and to identify the parties responsible for evaluating any changes in the data. As background to this question, Table 5 also gives responses from the audit where agencies indicated if they believed that the SIP growth projections were adequate for point source or area source growth and, therefore, periodic evaluation was thought to be unnecessary.

The results indicated that only 11 agencies (18 percent) performed a periodic review of growth projections. Most (36 agencies or 59 percent) did not. Two agencies indicated the question was not applicable and 12 did not respond clearly one way or the other. Several comments from agencies giving a negative response indicated that, generally, growth is not currently perceived as a problem or that their SIP's contain conservative projections (i.e., relatively large projected percentage increases in emissions) that are not likely to be exceeded. In addition, 25 agencies indicated that point source growth was adequately projected in the SIP: only one agency had concerns that additional VOC reductions from point sources may be necessary. Similarly, 24 agencies indicated that the SIP projections were seen as adequate for the currently expected growth in area sources. The one agency mentioned previously also indicated that further reductions in VOC from area sources might be necessary.

Some agencies commented that growth is checked by a review of ambient data or of the emissions inventory. A comprehensive review of growth data is not done by these agencies.

SIP Coordination and Validation

(Number of Agencies)

		Yes	No	NA	CD	Total
D7 Does agency have a system to document emissions reductions claimed in RFP demonstration?	ozone	12	7	0	7	26
	CO	11	12	2	9	34
D7 Can agency assure RFP emissions reductions are consistent with inventory or enforcement data?	ozone	13	7	0	6	26
	CO	11	11	1	11	34
D8 Is agency able to show SIP emissions reductions claimed are achieved in practice?	agencies	40 66%	11 18%	1 3%	8 13%	

		Source Inspection, Permit, or Test	TCM Verification	Other	NA	CD
D8 Principal verification method employed for above.	agencies	34 56%	2 3%	4 7%	13 21%	8 13%

		Yes	No	NA	CD
D9 Does agency perform a periodic review of whether SIP growth projections have actually occurred?	agencies	11 18%	36 59%	1 3%	12 20%
D9 Agency believes SIP growth projections are adequate for point source growth.	agencies	25 41%	1 2%		35 57%
D9 Agency believes SIP growth projections are adequate for area source growth.	agencies	24 39%	1 2%		36 59%

IV. NEW SOURCE REVIEW

A. INTRODUCTION

The new source review (NSR) audit examined the ways that State and local agencies require and actually carry out the preconstruction review of new and modified stationary sources of air pollution. The audit was designed to address all sizes of sources but placed an emphasis on sources defined as "major" according to the Federal Clean Air Act. This is consistent with EPA's primary focus in its preconstruction review regulations to establish minimum requirements for major stationary sources. It should be recognized, however, that State and local air pollution control agencies typically focus much of their time and resources on the more numerous population of minor sources that must also undergo preconstruction review before a permit to construct can be issued.

A specific goal of the NSR audit was to provide an overall snapshot of how State and local preconstruction review permit programs, including prevention of significant deterioration (PSD) and NSR programs specifically for major sources, are now operating. Additional goals were to assess State and local programs in terms of regional and national consistency, provide information feedback concerning certain agency practices, identify potential problems, particularly where Clean Air Act requirements are not being met, reach conclusions as to the implications of the audit findings, and to identify areas where EPA may need to emphasize future policy development. This report attempts to convey the FY 1984 audit results relative to all of these goals.

The audit committee selected seven basic audit topics in developing the NSR audit questionnaire: (1) Administrative Procedures, (2) Applicability Determinations, (3) BACT/LAER Determinations, (4) Ambient Monitoring (PSD), (5) Ambient Impact Analysis, (6) Emissions Offset Requirements, and (7) Permit Specificity and Clarity. A number of questions were established under each audit topic to examine whether and how agencies were carrying out specific preconstruction review responsibilities. Typically, the responses were to be provided in the form of "yes" or "no" answers, but special comments could be provided wherever necessary.

The NSR audit considered responses from 64 air pollution control programs. This included 49 States,* the District of Columbia, Puerto Rico, the Virgin Islands, and 12 local agencies. Where a State program involved one or more district offices and these offices were audited, they were considered part of the State program. Local agencies were considered separately, even though there was a dependency on the State for certain program operations in some cases.

B. MAJOR FINDINGS AND CONCLUSIONS

This section summarizes the findings of the 1984 NSR audit. Where appropriate, conclusions have been drawn to clarify and put into proper perspective the specific findings. In addition, findings that are determined to have national implications are discussed in greater detail than are problems which appear to be more isolated in nature. For a better understanding of how the major findings were derived, the reader is referred to

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*The State of California does not have authority to issue permits and does not implement an NSR review program. These activities are performed by the local air pollution control agencies.

Sections IV.C. through IV.I., where a breakdown of the individual audit questions and answers is provided.

1. Administrative Procedures

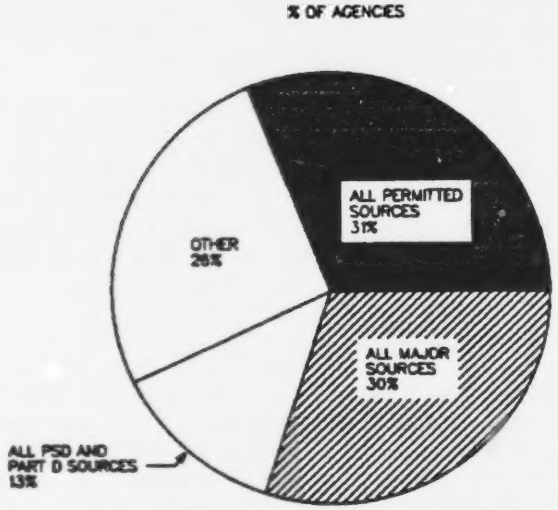
Major Findings

Public Participation and Notification--

- Sixty-one percent of the 64 audited agencies are reported to routinely provide the public with an opportunity to comment on each proposed major source permit. The rate drops to 31 percent when both major and minor source source permits are considered. The major sources commonly not addressed are non-PSD sources locating in attainment or unclassified areas. Figure 1 below illustrates the percentage of agencies for which public comment is routinely required for specified source types.

- When the public is notified, agencies appear to provide sufficient information concerning proposed permit actions, and adequately notify other affected government agencies and officials, including Federal Land Managers in Class I areas, of the proposed determination.

FIGURE 1
PUBLIC PARTICIPATION REQUIREMENTS



Application Documentation and Determination of Completeness--

- o More than 80 percent of the agencies audited state that they notify PSD permit applicants concerning the finding of completeness/incompleteness. All applicants are reportedly notified if the application is determined to be incomplete.
- o Almost 90 percent of the agencies indicate that a record is kept that tracks when agency actions were taken with respect to permit applications.

Prerequisite Statewide Source Compliance--

- o With only one exception, all audited agencies try to ensure that when a major source or major modification applies for a permit in a nonattainment area, all existing major sources owned or operated by the applicant throughout the State are in compliance (or on a compliance schedule).
- o Seventy percent of the agencies claiming to ensure Statewide source compliance report that documentation of compliance is provided in the permit file. This finding implies no specific wrongdoing on the part of those agencies who do not provide documentation in the permit file. However, the practice is clearly recommended as a means of verifying within the permit process that the source compliance prerequisite is being checked.

Conclusions

Overall, the initial assessment of how the administrative procedures have been implemented provided generally acceptable findings with the caveat that this first audit was not supported by a significant amount of major source and major modification permit data. However, the failure of some agencies to require public notification for all major sources is a particular concern.

The public participation requirement under 40 CFR 51.18(h) is general in its coverage in that it does not specify what sources and modifications must be addressed. However, when taken literally, all new and modified sources would fall under its coverage. Some States for years have maintained that the public notification process is expensive and often has little impact on the outcome of the final permit. Consequently, public comment is oftentimes sought on a discretionary basis, particularly for minor source permits and permits issued to major non-PSD sources locating in attainment and unclassified areas. EPA does not now have a policy which supports such limited coverage, but EPA should examine its own regulations to reassess the need to have them apply to all permitted sources. Until such reassessment is actually done, States are encouraged to examine their current procedures and to consider the expeditious implementation of the public participation process for at least major sources and major modifications, regardless of the applicable type of review.

2. Applicability Determinations

Major Findings

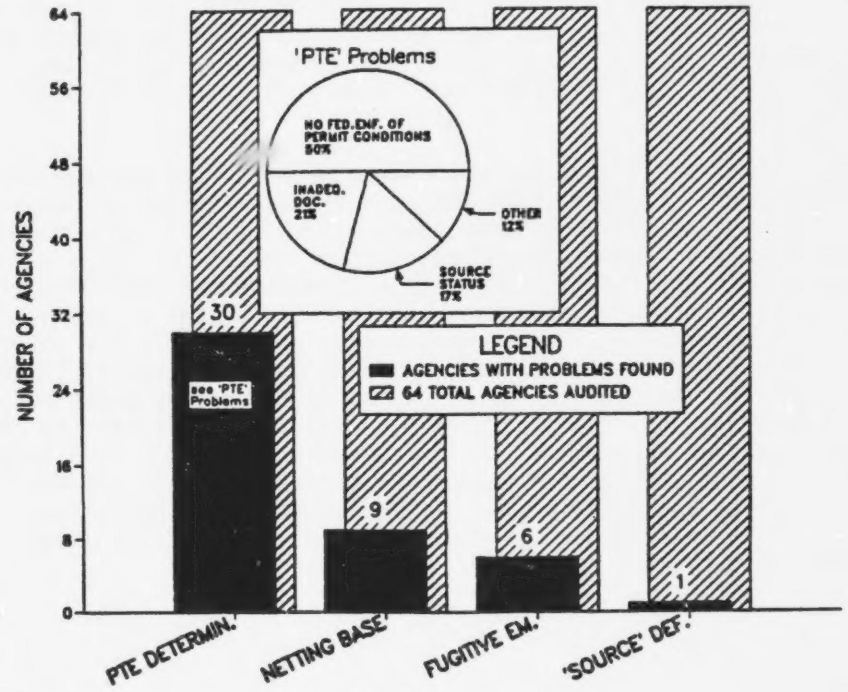
- Almost half of the audited agencies may be inadequately making applicability determinations for major new sources and major modifications because of a misunderstanding or misuse of the concept of potential to emit (PTE). (See Figure 2. The inset chart, "PTE Problems," illustrates proportionately the various types of problems associated with potential to emit that the audits identified.)

- Most agencies indicate that they use an acceptable concept of actual emissions to determine if a "net significant emissions increase" would occur for a source modification. Fewer than 10 percent were found who incorrectly used allowable emissions as their netting baseline. (See Figure 2.)

- Most agencies appear to adequately address fugitive emissions, to the extent that such emissions are reasonably quantified, in calculating "potential to emit" and "net emissions increase." Problems were identified in less than 10 percent of the agencies audited. (See Figure 2.)

- With only one exception, agencies report using their State implementation plan (SIP) approved definitions of "source" for PSD, NSR, new source performance standard (NSPS), and national emission standard for hazardous air pollutants (NESHAP) applicability. (See Figure 2.) However, some States have definitions that are known to differ from EPA's 1980 amendments and may require updating.

FIGURE 2
SOURCE APPLICABILITY DETERMINATIONS



- With only one exception, agencies appear to correctly apply the §107 area designations when making NSR applicability determinations for major sources.

- The audited agencies issue construction permits to many types of minor sources. Agencies differ, however, in the criteria used to determine which minor construction projects are subject to their permit requirements.

- The potential for a source to divide its construction plans with a series of applications in order to avoid major source review was identified as a potential problem in less than 10 percent of the audited agencies, and no cases were found where such circumvention actually occurred.

- Less than 5 percent of the agencies indicated that substantive conditions once issued within construction permits could be overruled by a board or commission without requiring new analyses of the affected provisions or public notification.

Conclusions

The misapplication of the EPA "PTE" definition in approximately 40 percent of the audited agencies is a problem that EPA considers to be significant. Several types of problems need to be addressed. Some permits could be improved simply by providing the documentation necessary to show how the applicability determination was made. For others, there is a need to establish Federally enforceable permit conditions as required to legally restrict the potential to emit to some level below maximum design capacity. In many cases, such conditions are already in an operating permit which the State and local agencies consider enforceable, but EPA does not. In others, however, the operational and design limitations used to restrict the source's potential to emit are not included in any permits.

All agencies should examine their policy and procedures to verify, first, that they are using EPA's definition of "PTE" for determining source applicability to major source requirements, and second, that they are using the concept properly. Proper use of the definition requires that special permit conditions be established when necessary to ensure Federal enforceability. Sources should not be allowed to avoid major source review without the appropriate Federally enforceable limitations. (See additional comments concerning the issue of Federally enforceable conditions under the conclusions for Permit Specificity and Clarity, page IV-10.)

3. BACT/LAER Determinations

Major Findings

- With only one exception, all agencies report that they require each best availabile control technology (BACT) analysis to address each regulated pollutant potentially emitted by the PSD project in significant amounts. Isolated discrepancies were revealed, however, in several PSD permits.

- Most agencies claim to require the consideration of more than one BACT control strategy, but this was often done on a case-by-case basis rather than routinely.

- Most agencies reportedly perform an independent evaluation of the applicant's BACT analysis, or review the applicant's analysis. However, audits of selected PSD permits identified instances where the agency's own evaluation was not very apparent.

- A tendency for BACT to conform with NSPS/NESHAP has been found to occur in at least 27 percent of the audited agencies for at least one particular pollutant or source category. The tendency for lowest achieveable emission rate (LAER) to conform with NSPS/NESHAP appears to be significantly lower.

- Eighty-eight percent of the agencies indicate that they use EPA's BACT/LAER Clearinghouse as part of their BACT/LAER determination procedure. Seventy-eight percent stated that the clearinghouse provides useful information, but many also cited certain shortcomings.

Conclusions

Agency policy and procedures appear to be adequate in most cases. However, there were relatively few permits issued from which the agencies' practices could be fairly evaluated. The tendency on the part of some agencies to set BACT at levels conforming to NSPS is of some concern but should not necessarily be interpreted as a deficiency at this time. What it does suggest is that the BACT requirement is not typically being used as a technology-driving mechanism as Congress had intended. As greater amounts of the available PSD increments are consumed, noticeable changes are likely to be observed in the use of BACT to establish tighter levels of control. In any event, EPA will continue to audit the BACT determinations being made by State and local agencies to identify where and when BACT effectively provides better control than that provided by NSPS.

4. Ambient Monitoring

Major Findings

- The vast majority of State and local agencies report that they adequately -

  (a) require applicable PSD sources to submit preconstruction ambient monitoring data,

  (b) determine when an applicant may use representative existing air quality data rather than conduct new monitoring, and

  (c) ensure that monitoring is performed in accordance with PSD quality assurance requirements.

- When a PSD source is exempted from the preconstruction ambient air quality data requirement, agencies, with few exceptions, indicate the basis for the exemption in the preliminary determination.

Conclusions

Preliminary indications are that few problems exist with respect to the PSD requirements for preconstruction monitoring data. In retrospect, it would have been useful to have included in the audit a survey question to identify the number of PSD applicants required to conduct preconstruction monitoring. Information that was volunteered in a portion of this year's audit reports suggests that a large amount of the monitoring data being collected to meet the PSD requirements is being derived from existing monitors, rather than from new monitoring by the applicant. This general assumption is based on the fact that for nine audits from which the information could be determined, 15 out of 19 PSD applicants were allowed to use existing representative data. If this information is indicative of the national trend, then additional attention should be given to the adequacy of EPA's current guidance and to how it is being used by State and local agencies to approve representative air quality monitoring sites. The questions in this year's audit were somewhat general and did not specifically address the criteria set forth by EPA in its guideline on PSD monitoring.

5. Ambient Impact Analysis

Major Findings

PSD Increment Consumption--

- Agencies typically respond that they give adequate consideration to PSD increment consumption from major projects. However, auditors believe that almost 20 percent of the audited programs need to devise a means of tracking minor source emissions where the PSD baseline has already been triggered.

- Most agencies have no specific plans to periodically assess PSD increment consumption beyond the analysis accompanying the PSD application for major projects. There is a general sense of uncertainty as to how such periodic assessments are to be done.

- Agencies reportedly give adequate consideration to both the long- and short-term PSD increments.

- With only one exception, agencies report that they implement criteria meeting or exceeding the special significance criteria for assessing major source impacts on Class I area increments.

NAAQS Protection--

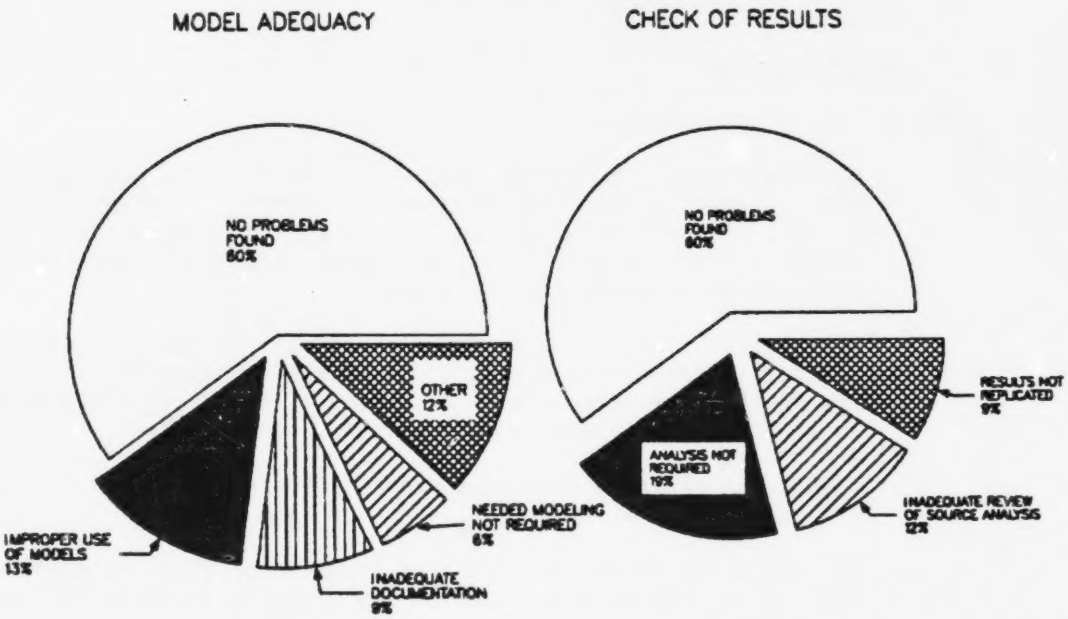
- The emissions baseline most commonly used to evaluate the impact on the national ambient air quality standards (NAAQS) of new and modified sources consists of the modeled allowable emissions from the proposed source plus a monitored background air quality. However, a significant amount of modeling using allowable emissions from existing major sources also appears to occur. These findings were derived from a survey question from which EPA will evaluate current practices and consider the need for policy development.

- Approximately 45 percent of the audited agencies claim to evaluate, on a routine basis, the ambient impact of minor source construction. Many other agencies do so on a case-by-case basis when they suspect that an ambient air quality problem could result.

Dispersion Models--

- While most agencies use or require the use of EPA reference models to carry out the ambient impact analysis, procedural and other problems were revealed in approximately 40 percent of the audited agencies. Also, 40 percent of the audited agencies do not always check the applicants' modeling analyses or do not check them as fully as the auditors deemed necessary. (See Figure 3.)

FIGURE 3
DISPERSION MODELING FOR NEW SOURCE REVIEW



MODEL ADEQUACY

CHECK OF RESULTS

Conclusions

The fact that many agencies do not routinely model the ambient impact of minor sources does not generally appear to be a problem at this time. Audit reports do show that agencies tend to model minor source impact (oftentimes using screening models) when the possibility for ambient problems is suspected, usually through an awareness of existing ambient air quality concentrations in the area surrounding the proposed source. However, PSD increments are more difficult to account for because existing air quality data often cannot be used to determine the extent to which increment consumption is taking place. For this reason, it becomes important to begin tracking all emissions that contribute to the PSD increments once the baseline has been triggered. In fairness to those agencies that were cited for not tracking minor source emissions, it is believed that most agencies do not. Consideration of the effects caused by both new and existing minor sources in PSD areas becomes increasingly more important as the amount of available increment is reduced. The absence of EPA guidance in terms of developing increment tracking procedures, particularly with respect to short-term averaging periods, needs to be addressed before State and local agencies can be expected to do much developmental work of their own in this area.

With regard to dispersion modeling practices, the use of actual (rather than allowable) emissions and other technical aspects of modeling by some agencies needs further study before their analyses can be considered fully satisfactory. In addition, agencies should generally be giving more attention to their own technical documentation of the modeling analyses provided by permit applicants. For some agencies, this issue may be difficult to address in the near term because of in-house limitations on resources and expertise. EPA technical assistance may be the best near-term solution while these agencies seek to establish or upgrade their modeling capabilities. In other cases, it appears that there is a need for agencies to review their procedures in order to ensure that modeling analyses receive the appropriate in-house attention.

6. Emissions Offset Requirements

Major Findings

Insufficient permitting activity involving emissions offsets occurred during the audit period. This fact resulted in a large number of agencies answering "not applicable" to the question asked in this portion of the audit. Responses in some audit reports did indicate, however, that some agencies are not fully aware of Federal criteria for crediting offsets due to early source shutdowns and production curtailments, as well as other issues involving the proper use of emissions offsets.

Conclusions

While isolated permitting problems were found in some audits, these problems should not be taken to imply that a problem exists nationally. EPA should consider the need to clarify and even expand its guidance regarding the appropriate use and timing of emissions offsets. This would assist agencies in the future to ensure that major construction in nonattainment areas meets the requirements of the Clean Air Act before a permit can be issued.

7. Permit Specificity and Clarity

Major Findings

- Approximately 75 percent of the audited agencies said that they routinely identify all emissions units and their allowable emissions rates on the final permit.
- When the allowable emissions rates are stated in the permits, agencies claim that they are typically clear, concise and enforceable. EPA auditors did find, however, that allowable emissions rates are not always identified in the permits.
- Approximately half of the audited agencies reportedly do not routinely state or reference applicable compliance test methods in the permit terms and conditions. Many agencies believe that it is not necessary to address compliance test methods as permit conditions.
- Approximately one-third of the audited agencies demonstrated inconsistent policy in terms of identifying special operational and design limitations as permit conditions when needed to restrict a source's potential to emit.
- Most agencies believe that the information contained in a source's application for a permit is an enforceable part of the permit itself. Only 10 percent of the agencies indicated that the information contained in permit applications submitted to them is not an enforceable part of the permit.

Conclusions

The audit raised some important questions concerning the enforceability of the permits being issued by many State and local agencies. In some cases, the lack of adequate documentation in the permit file made it very difficult for auditors to determine whether special permit conditions should have been included in the permit. In other cases, however, it appears that important limitations affecting a source's operation or production capacity were obviously not addressed. In the absence of the necessary permit conditions, such presumed limitations upon a source might prove difficult to identify or enforce.

Further complicating the issue of enforceability are (1) the variety of techniques that agencies currently use to establish "enforceable" limitations upon sources for such things as defining allowable emissions, designating applicable compliance testing procedures, and restricting the operation and production capability of certain sources; and (2) the fact that many agencies typically rely upon operating permits rather than construction permits to establish limitations, regardless of the specific technique used. EPA traditionally has held that conditions contained in most operating permits are generally not Federally enforceable, even though State and local agencies themselves are often able to enforce them.

EPA needs to examine carefully the whole issue of permit enforceability, including clarification of the minimum criteria required for establishing Federally enforceable permit conditions. Only after this is accomplished can EPA fairly assess the adequacy of current State and local agency permit issuance practices.

C. ADMINISTRATIVE PROCEDURES

The FY 1984 audit examined the adequacy of State and local agency procedures that govern the way permit applications are checked for completeness of information, tracked during the entire review process, and made available for public review once a preliminary determination has been made. In addition, the audit sought to determine whether agencies are adequately ensuring compliance of existing sources when the owner/operator applies for a new major source permit in a designated nonattainment area. This compliance provision is required under Part D of the Clean Air Act.

Public Participation and Notification--

Almost 40 percent of the audited programs revealed inconsistencies in at least one of the three areas examined for providing public notice of a proposed permit action. These areas include the types of sources for which public notice must be issued, the adequacy of information contained in the public notice, and the procedures used to notify government officials of the pending permit action.

1. For which new or modified sources was the public afforded an opportunity to comment on proposed permits?

	YES	NO
a. all PSD (100/250 TPY) sources	91%	9%
b. all 100 TPY nonattainment NSR sources	81%	19%
c. all other 100 TPY sources	63%	37%
d. other sources	75%	25%

The summary of responses illustrates the fact that the public is not always being afforded a formal opportunity to comment on the construction permits being issued by State and local agencies. Of the six agencies that do not require public notification for PSD sources, none has PSD program authority. Consequently, the PSD program, including the requirement for public notification, is being carried out by EPA in these States. Even so, sources subject to a Federal PSD program are still required to obtain a State or local agency permit to construct and should also be required to undergo public comment before a permit is issued by the State or local agency. The audit responses do not suggest that this is the case, however.

Concerning the 12 agencies that do not require public notification for major sources in nonattainment areas, a problem only appears to exist in two. Of the remaining 10 agencies, one agency indicated that it had no nonattainment areas; three agencies are under a Federally-imposed construction ban; one (local) agency does not review major sources; and five agencies reportedly agreed, just prior to the 1984 audits, to begin notifying the public when a major source sought a permit in a nonattainment area. (The effects of these agreements will be observed during the 1985 national audit.)

Where most agencies fail to adhere to the public participation requirements is for major non-PSD sources locating in attainment or unclassified areas. Twenty-three agencies fall under this category. Next year's audit will attempt to examine the number of permits that this problem may actually involve.

Finally, 48 agencies appear to afford the public an opportunity to comment concerning some major and minor source permits being issued, but not always on a routine basis.

Taking all these factors into account, the responses can then be collectively summarized as follows:

Thirty-nine agencies (61%) routinely provide the public with an opportunity to comment concerning all major source permits issued by those agencies. In addition, 20 of the 39 agencies also provide similar opportunity for public comment concerning essentially all minor sources to which permits are issued.

	Yes	No
2. Do the public notices routinely provide adequate information to satisfy the agency's public participation requirements?	72%	28%

All but one of the audited agencies reportedly issue public notices offering the public an opportunity to comment on at least some proposed permits. However, the notices issued by 18 agencies reportedly do not routinely provide sufficient information. The most common finding involved the lack of a statement identifying for the public the estimated ambient impact of the source, including the degree of increment consumed by PSD sources. This omission was identified in notices issued by 12 agencies. Some agencies commented that information pertaining to the source's ambient impact is required only for PSD. EPA acknowledges that the inclusion of such information is specifically called for only in the PSD regulations, but believes that it is important to convey the results when an ambient impact analysis is performed. It could not be determined in all cases whether PSD or non-PSD permits were involved when the omission was identified, but in at least 4 of the 12 agencies, the finding did pertain only to non-PSD permits.

Five audits found other omissions, including failure to provide a preliminary determination, failure to require an opportunity for public hearing, or to make adequate source and analysis information available for public inspection.

	Yes	No
3. Were other State and local air pollution control agencies and other officials whose jurisdictions might be affected by the proposed new or modified source adequately notified of the proposed action?	92%	8%

Most programs reportedly provide adequate notice to government agencies and officials. Only five agencies were found to have inadequate notification procedures to ensure that the appropriate agencies and officials, particularly Federal Land Managers, are routinely notified of pending permit actions.

Application Documentation and Determination of Completeness--

	Yes	No
4. Is there a review to see if each permit application is complete?		
a. Agency reviews applications for completeness	100%	--
b. applicant is informed concerning the finding of completeness/incompleteness	83%	17%

State and local agencies are required under 40 CFR 51.24 to notify all PSD permit applicants concerning the status of their applications, i.e., complete or incomplete. Some agencies appear to provide such notification to all applicants or at least all involving major sources. However, at least 11 agencies with responsibility for carrying the PSD program appear only to notify the PSD applicant if the application is found to be incomplete.

	Yes	No
5. Is a formal record kept on file which documents agency action with respect to a permit application?	89%	11%

Only seven audits identified agencies that did not maintain a status record of actions taken on a particular permit. It should be noted that, with one exception, these agencies handle relatively few permits, and particularly few permits for major sources or major modifications. While there is not a Federal requirement pertaining to maintenance of a permit tracking system, such a system is believed to provide benefits to the efficiency of the overall permit process, including the timely issuance of permits. The high percentage of agencies that maintain such a system appears to attest to this. Information from the audit reports indicates that the existing systems range from informal to computerized tracking systems.

Statewide Source Compliance--

	Yes	No	NA*
6. For major new or modified sources which are subject to Part D of the Clean Air Act (nonattainment area major sources), has the agency ensured that other sources owned by the applicant are in compliance, or on a compliance schedule, with applicable SIP requirements?	72%	3%	25%

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*"Not applicable"

With the exception of one program, reported data indicated that all applicable agencies routinely seek to ensure that when a major source applies for a permit in a nonattainment area, all existing major sources owned or operated by the applicant throughout the State are in compliance (or on a compliance schedule) with SIP requirements. Differences did exist, however, in the way that such compliance was ensured, and whether such compliance was documented in the appropriate permit file.

Although it could not be determined in all cases, some agencies require the applicant to certify the compliance of existing sources, while others simply run an in-house compliance check. A few agencies indicated that a specific question regarding Statewide compliance is provided on the permit application; other agencies reportedly are considering doing the same.

	Yes	No	NA	NR*
7. Does the agency document Statewide source compliance in the permit file?	52%	23%	23%	2%

Fifteen agencies indicated that they did not provide any documentation of Statewide source compliance in the permit file. While no specific requirement for such documentation exists, agencies should have some record readily available to show that this requirement is being met as a permit consideration, as required by the Clean Air Act.

D. APPLICABILITY DETERMINATIONS

This portion of the new source review audit sought to evaluate how well agencies apply the criteria contained in the SIP as to whether certain projects are subject to review and apply the appropriate requirements leading to the approval or denial of a construction permit when subject. The task of making correct applicability determinations depends upon the existence of adequate regulations containing the proper definitions and applicability criteria, plus the in-house expertise to properly apply them to each potential source.

This part of the audit provided questions designed to address directly the adequacy of the applicability determination process, including the various definitions of "source" in use, the use of "potential emissions" to determine a project's status for possible review as major new and modified sources, and the consideration of fugitive emissions in emissions calculations.

Another group of questions examined the proper application of §107 area designations and how agencies deal with major sources that seek to locate in areas where a construction ban has been imposed.

Two questions were asked to determine the potential for sources to improperly circumvent the applicability and/or depth of an agency's permit process. Finally, several questions were asked to gain a better understanding of agency requirements for permitting minor source construction and the use of registration systems to identify sources for which permits may not be required.

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*No response

Source Discovery System--

1. What are the mechanisms used by the agency to ensure that applicable sources submit construction plans for formal review and approval prior to beginning their proposed construction?

Agencies typically responded by identifying more than one source discovery mechanism. Those most commonly identified, along with the frequency of such response, are as follows:

64%	Inspection/surveillance
55%	Other government agencies (Building Department, Department of Commerce, Planning Commission, etc.), and
23%	Newspapers/trade association journals.

Audit reports occasionally included comments about source discovery problems. Evidence was found in at least four audits that sources had been constructed without first receiving a permit. In one of these agencies, it is common practice to issue such sources only operating permits. The question of Federal enforceability was raised with respect to those sources. In a fifth program, the audit questioned whether all appropriate air permit applications were being received by the air program office because the applications were first being screened by a central office with little or no air expertise. In yet another case, sources that received construction permits were found to commence operation without first notifying the agency.

Review Applicability--

2. Does the agency apply the proper Federal definition(s) of "source" (i.e. those now in effect in Federal NSR/PSD regulations)?	Yes	No	NA	NR
a. PSD	87%	--	13%	--
b. NSR (Part D requirements)	90%	2%	8%	--
c. NSPS	97%	--	3%	--
d. NESHAP	86%	--	11%	3%

Audit reports indicate that agencies apply the current Federal definition of source in most cases. A problems was identified in one agency where the audit indicated that, although the agency had adopted the correct definition of source, that definition was not being implemented properly. No further explanation of this reported misapplication was provided. Two agencies have approved definitions (one for PSD, one for NSR) whose overall stringency may be considered equivalent to the Federal definition, even though certain aspects of the definitions are, in fact, less stringent. No permits were found, in either case, to suggest that any difference in applicability determinations resulted from the use of those definitions of source.

	Yes	No
3. Does the agency typically use the best available emissions projections and Federally enforceable restrictions in defining a new major source's (or unit's) "potential to emit"?	61%	39%

Permits issued by at least 25 agencies were found to have conceptual problems concerning the use of the potential to emit definition for new major sources. The PTE is a source's maximum capacity to emit a pollutant under its physical and operational design. In order for any physical and operational limitations to be considered part of the source's design (to restrict the maximum capacity of the source), they must be Federally enforceable. The major status of new sources must be determined on the basis of their potential to emit.

In many cases, agencies did not establish permit conditions to identify the limitations restricting potential to emit. In other cases, the conditions were contained in operating permits which were not recognized as being Federally enforceable. Finally, four agencies did not provide sufficient documentation in permit files for the EPA auditors to be able to determine whether potential to emit was properly considered.

	Yes	No
4. Does the agency routinely use an existing source's "potential to emit" to determine major source status for proposed modifications?	81%	19%

Audits of six agencies revealed applicability determinations where the major source status of the existing source was not considered. In each case, agency policy dictated that major modifications were to be determined only on the basis of the proposed change in emissions. Some agencies required that the emissions increase itself must be major (i.e., 100 TPY). Others set lower limits such as 50 TPY. In three audits, it was reported that there was not sufficient information in the individual permit files to demonstrate whether a source's potential to emit was adequately considered. In at least two cases, emissions reduction credits were used to avoid a significant net emissions increase without making the emissions reductions Federally enforceable. In all, at least 12 agencies are believed to use improperly EPA's current concept of potential to emit for major modifications.

	Yes	No	NA	NR
5. Does the agency use as its netting baseline actual TPY emissions?	73%	11%	6%	10%

Seven agencies reportedly base the determination of a "net emissions increase" on allowable emissions. In another agency, a single permit was questioned because there was insufficient documentation provided to determine whether emissions estimates were representative of actual emissions for a normal, 2-year period. Current EPA rules require that the netting baseline use actual emissions.

	Yes	No	NA	NR
6. Does the agency check applications for proper use of contemporaneous emissions changes to prevent the "double counting" of emissions decreases for netting purposes?	77%	6%	14%	3%

Four agencies were found to have inadequate systems to track emissions changes and, therefore, were likely to experience difficulty ensuring that "double counting" of some emissions decreases did not occur. However, no specific permit was identified for which double counting had actually occurred. Nine agencies answered "not applicable," presumably because the use of netting is not allowed in those agencies as means of gaining exclusion from the permit process.

It is important also to note that double counting of emissions reductions may occur inadvertently where agencies do not adequately record the emissions reductions (used for netting out of review) as permit conditions. This problem was found to occur in at least two cases (see question 2.4).

	YES	NO	NA
7. Does the agency adequately address fugitive emissions in calculating "PTE" and "net emissions increase"?	86%	11%	3%

The consideration of fugitive emissions presented a potential problem in at least seven agencies. Responses were not always specific other than to indicate that a problem was found. In one case, fugitive emissions were not addressed for a specific source category. Another indicated that netting calculations sometimes failed to consider fugitives.

	Yes	No	NA	NR
8. Does the agency properly apply the §107 area designations when determining what type of preconstruction review will be required of major construction?	94%	2%	2%	2%

Only one agency was determined to have problems with regard to geographic issues. That agency was identified for its lack of adequate consideration of major sources locating in nonattainment areas. One local agency answered "not applicable," presumably because all major source reviews are conducted by the State agency.

	Yes	No	NR
9. Where a construction ban is in effect, would the agency deny a permit to a major source construction project in the ban area?	73%	12%	15%

Twenty-six agencies indicated that construction bans were in effect within their jurisdiction. Of these, three agencies indicated that they would not deny a permit to a major source in the ban area. Two of the agencies noted that the permits issued would contain the condition that construction could not commence until the ban is lifted. In the third case, the agency indicated that it had no authority to deny a permit solely on the basis of a "Federal" ban. However, the respondent added that EPA would be notified that a State permit had in fact been issued in a ban area.

Four other agencies with bans in effect did not answer the question other than to provide comment. Two indicated that no affected applications had been received, while one indicated simply that it would consult with EPA. The fourth respondent provided a detailed comment suggesting that in certain instances a permit might be issued to a major source in the ban area.

10. Does the agency issue permits for "minor" construction?

a. 62% All minor sources.

b. 38% Certain minor sources as described by agency rule or regulation.

c. 0% Only major sources (100 TPY).

While all audited agencies indicated that permits were issued to minor sources, differences existed as to what minor sources were actually regulated and the degree of review that was performed. Forty agencies reported that all minor sources greater than a specified cutoff size receive permits. A number of different cutoff sizes were identified; values of two TPY or less were mentioned most often. The remaining 24 agencies indicated that only certain minor sources, as described by agency rule or regulation, are required to receive permits.

	Yes	No
11. For major sources exempted from both PSD and nonattainment NSR requirements, does the agency continue to apply other permit requirements?	100%	--

All agencies require that all major sources get some type of permit. Major sources are subjected, as a minimum, to the review applied to minor sources i.e., compliance with emissions regulations, and case-by-case ambient air quality screening. One agency responded that no major sources are exempted from PSD review.

	Yes	No	NA
12. Are all exempted sources subject to some type of registration system?	42%	53%	5%

Twenty-seven of the audited agencies require some type of registration system. Of those who do not (33), seven stated that very few sources were exempt, therefore making such a system impractical. One agency commented that there were too many exempted sources, thus making a system impractical. Five agencies stated that some exempt sources were further exempted from a registration system pursuant to various State rules.

E. BACT/LAER DETERMINATIONS

The audit examined several aspects of the BACT/LAER control technology requirements that are generally applicable to PSD sources and major new and modified sources in nonattainment areas. However, more weight was given to the BACT analysis for this year's audit. With respect to BACT, emphasis was put on whether agencies were requiring a BACT analysis for each regulated pollutant emitted in significant amounts. Prescribed significance thresholds applicable to each pollutant are defined by the PSD regulations.

In order to get a better idea of how thoroughly the BACT analysis is being carried out, additional questions were asked to determine whether the analysis routinely considered more than one possible control technology, and whether the agency routinely took it upon itself to evaluate the analysis submitted by the applicant in an independent fashion.

The audit also sought to determine the ability of the BACT/LAER requirements to function as technology-forcing requirements. This was done simply by asking what the tendency was for existing BACT/LAER determinations to conform exactly to NSPS or NESHAP--the minimum control requirements legally allowed for BACT and LAER.

Finally, the audit involved two questions designed to assist EPA in learning about the participation of State and local agencies in using the BACT/LAER Clearinghouse and the usefulness of this clearinghouse's information for setting BACT/LAER.

Pollutant Applicability--

	Yes	No	NA
1. Does the BACT analysis consider each regulated pollutant emitted in significant amounts?	80%	5%	15%

Only one agency was found to not apply the BACT requirement to all regulated pollutants when they are emitted in significant amounts. In this case, it was reported that the agency did not recognize all PSD applicable pollutants. Consequently, no BACT analysis was required for those pollutants.

While no other agencies were identified as failing to consider each regulated pollutant, in two agencies, specific PSD permits were found that did not contain BACT analyses for any pollutants. No explanation was offered for this omission, other than that this was not believed to be symptomatic of all PSD permits issued by these agencies.

Two agencies reportedly also required BACT for pollutants other than those regulated by EPA. One agency identified chromium as a regulated pollutant for which BACT applied; the other identified hydrochloric acid.

Control Strategy Alternatives for BACT--

	Yes	No	NA
2. Does the review agency require the consideration of more than one control alternative?	71%	14%	15%

Nine agencies reportedly do not require the consideration of other control alternatives as part of the BACT analysis, according to responses recorded on the audit questionnaires. In further examining the audit reports, however, it appears that three of these agencies may only require other control alternatives to be considered on a case-by-case basis. That is, if a control technique is "obvious" or common for a particular source category, then no control alternatives are formally required to be examined. On the other hand, nontraditional control techniques or unusual source types would likely be required to consider several control techniques as part of the BACT analysis.

Three other agencies who indicated that they did not require consideration of different control alternatives also commented that their BACT procedures included a preapplication meeting with the applicant to discuss and determine BACT requirements. They claimed that this effectively eliminated the need for considering more than the control technology in the application itself.

3. To what extent are economic, energy, and nonair environmental impacts considered in the applicant's BACT analysis?

Thirteen out of 62 agencies failed to respond to this question. It could be inferred, perhaps, that those agencies do not give serious attention to these analyses, possibly because of poor understanding of the requirements. Six agencies relied on experience, the clearinghouse, or the information submitted by the applicant in order to make a determination. Of the agencies considering all the criteria, eight weighed economic factors most heavily, and three did not consider nonair environmental factors in their determinations. Six agencies stated that the question was either not applicable, or that the answer could not be determined.

	Yes	No	NA
4. Does the agency perform an independent evaluation of applicant's BACT analysis?	81%	4%	15%

Only two agencies indicated that they did not perform an independent evaluation of the applicant's BACT analysis. These agencies merely reviewed the applicant's analysis. In both cases, the agencies indicated in a preceding question that they routinely required the consideration of control alternatives as part of the applicant's BACT analysis. The audit results did not usually provide sufficient information to suggest that the other agencies, which responded affirmatively to the question, actually went beyond a review of the applicant's analysis and to what extent.

5. What tendency is there for the reviewing agency's determinations to conform exactly to minimum NSPS/NESHAP requirements?

Responses to this question were somewhat imprecise (e.g., "yes," "strong," "moderate," "somewhat lower") but the responses appear to indicate that BACT tends to be set at or close to NSPS in at least 17 agencies. In some cases, however, the tendency may apply only to a particular pollutant. In two agencies, for example, the tendency appeared to be limited to particulate matter (opacity determinations); in one case, SO_2; and in another agency, VOC. Often it was not clear as to the number of permits the "tendency" was based on, but in at least one case only one PSD permit had been issued by the agency. It is believed that further evaluation of this issue in subsequent audits will provide a better indication of the use of BACT as a technology-forcing mechanism.

With respect to LAER, the tendency to conform with NSPS/NESHAP appeared in only five agencies. In two agencies, auditors referred to the tendency to conform to NSPS as being "strong." In the others, the tendency was less significant.

	Yes	No	NA
6. Does the agency make use of the BACT/LAER Clearinghouse?	88%	6%	6%

Fifty-six agencies indicated that they used the BACT/LAER Clearinghouse to some extent. Only four agencies indicated they did not. Of those four agencies, two stated that there had not yet been an opportunity to use the clearinghouse.

	Yes	No	NR
7. Has the BACT/LAER Clearinghouse been found to provide useful information?	78%	13%	9%

With respect to the usefulness of the clearinghouse, 50 agencies said that the clearinghouse was useful, while eight responded that it was not. In addition, some of the affirmative respondents indicated some problems with the clearinghouse. Comments in general ranged from "very helpful" to "too lenient."

F. AMBIENT MONITORING

This portion of the audit examined the PSD requirement which provides in general that PSD sources must gather air quality data as part of their application for a construction permit. The PSD regulations contain, for each pollutant, specific criteria that are to be used to determine when a source does not need to report ambient air quality data as part of a complete PSD application. For those pollutants for which ambient data must ultimately be reported, EPA guidelines set forth procedures whereby a source may be relieved of the responsibility to conduct monitoring if existing ambient data is available and it is "representative" of the air quality in the area where the proposed source would locate.

The audit asked two narrative questions concerning the criteria an agency follows in implementing the PSD monitoring requirements, including the use of representative existing data. Additional questions were asked in order to determine whether agencies (a) formally record their justification for excluding a source from gathering monitoring data, and (b) routinely ensure that EPA-prescribed quality assurance procedures are followed when monitoring is required.

Data Submittal Criteria--

1. Under what circumstances is a source required to submit preconstruction ambient monitoring data?

The ambiguity of this question resulted in a large number of inappropriate responses. As explained in the audit guideline, every PSD source with "significant" emissions of a particular pollutant, where both the existing air quality and the ambient impact of the proposed source or modification would also be "significant," must submit ambient monitoring data. The question was designed to determine whether each agency adhered to the tests for significant emissions and ambient impact in requiring preconstruction monitoring. Only 12 agencies provided responses that indicated an understanding of what the question had intended. This question will be addressed more clearly in the planned FY 1985 audit.

	Yes	No	NA
2. For sources not required to conduct monitoring, is the basis for the exemption provided in the preliminary determination?	72%	6%	22%

Three agencies indicated that the basis for the exemption is not provided in the preliminary determination, and a fourth agency was found to provide no explanation at all in at least two permit files where monitoring was not required of the applicant. Fourteen respondents indicated that the question was "not applicable," either because they did not have PSD authority or because they had never issued a PSD permit. It should be noted that there is no specific requirement that the basis for the monitoring exemption be included in the preliminary determination. However, it may be desirable to do so because all determinations pertaining to the PSD monitoring requirements should be documented, and the preliminary determination affords the public with an opportunity to know how the requirement was addressed.

Representative Data vs. Source Monitoring--

3. Under what circumstances may a source submit representative existing data, rather than conduct new monitoring?

Agency responses were typically brief and imprecise, thus preventing a fair assessment of the agencies' performance in this area. Responses such as "EPA guidelines" and "representative data" were provided most often. Two audits did, however, identify agencies that do not consistently follow EPA's guidelines for accepting representative data. In two additional audits, a single PSD permit in each was questioned because of inadequate justification for using representative data. Next year's audit will be designed to examine more carefully the use of representative data.

Quality Assurance of PSD Monitoring Data--

	Yes	No	NA
4. Do the monitoring data gathered by the source adhere to PSD quality assurance requirements?	78%	2%	20%

The audits identified only a single problem concerning the quality assurance of PSD data. This occurred in one PSD case where it was revealed that the source was not entirely meeting the quality assurance requirements under 40 CFR 58, Appendix B.

Thirteen respondents answered "not applicable" either because they did not have PSD authority or because they had no experience with PSD permits.

G. AMBIENT IMPACT ANALYSIS

The impact that a new source or modification will have on air quality is one of the most important determinations made during the new source review process. The audit examined three areas of concern pertaining to the way agencies assess the ambient impact of new and modified sources. Primary concern tended to focus on major source activities, but some minor source considerations were addressed as well.

The first area of concern examined was PSD increment consumption. Increments are consumed by PSD sources commencing construction after January 6, 1975, but are only consumed by other emissions increases occurring after the date of the first PSD application in a particular area. Agencies were evaluated to determine whether: PSD increment consumption was adequately considered, efforts to periodically assess increment consumption were planned, impacts on both long- and short-term increments were adequately considered, and whether the adequacy of assessments of sources impacting Class I area increment was sufficiently addressed.

The second area of concern involved protection of the NAAQS. Questions in this section examined the methods used to perform the NAAQS analysis, the extent to which minor source impact is considered, and the adequacy of the agencies' efforts to protect against ambient "hot spots."

Finally, two general questions concerning the use of air quality dispersion models were asked. These questions were designed to evaluate the agency's choice and use of models for the situation at hand, and to determine whether agencies routinely evaluate the modeling analyses submitted by the permit applicants.

PSD Increment Consumption--

	Yes	No	NA
1. Does the agency adequately consider the baseline concentration and emissions changes that affect increment consumption?	50%	17%	33%

The reported data suggest that most agencies perform PSD increment analyses adequately. However, problems were found in three agencies concerning their overall ability to account for emissions changes which consume PSD increment. Also, the EPA auditors commented in eight programs that there was a need to improve the agencies' consideration of minor source emissions, even though the agency itself believed the evaluation to be adequate. Twenty-one agencies responded "not applicable" because they did not have PSD authority or had no experience with PSD sources.

It should also be noted that two agencies were considered exemplary in their efforts to track minor source emissions to protect PSD increments.

	Yes	No	NA	NR
2. Does the agency perform or have plans to perform periodic assesments of PSD increment consumed?	49%	27%	21%	3%

A significant number of respondents indicated that either plans or actual efforts were underway to periodically assess PSD increments. Two agencies have actually performed assessments as part of their efforts to track minor source emissions as mentioned above. Most respondents answering affirmatively, however, did not identify a specific plan or schedule for periodically assessing increments. Several agencies responding with a negative answer indicated minimal growth occurring in their jurisdictions and could find no basis for periodic assessments, other than those performed by each PSD applicant. The smaller number of "not applicable" responses was due to the fact that some agencies without PSD authority or without PSD permit experience indicated that they still "planned" to assess increment periodically.

Four agencies (two provided no response) specifically requested EPA guidance as to how an increment assessment should be performed.

	Yes	No	NA
3. Are long- and short-term PSD increments being given adequate consideration as part of the ambient impact analysis?	76%	--	24%

Applicable agencies overwhelmingly responded that both the long-term and short-term increments were adequately considered. EPA auditors did not identify any examples of problems in the limited number of PSD permits examined. Some respondents did, however, indicate that evaluation of short-term impacts were difficult to make.

	Yes	No	NA
4. Does the agency make adequate assessment of the ambient impact from new sources and modifications on the Class I area increments?	71%	2%	27%

All but one of the applicable agencies claim adherence to EPA criteria when considering the impact of a PSD source on a Class I area. These criteria include (1) treating a pollutant concentration which exceeds 1 ug/m^3 (24-hr average) as a significant ambient impact if the source locates within 10 km of a Class I area, and (2) screening major sources locating within 100 km of a Class I area. Only one agency was found that did not follow the significant impact criteria for Class I areas. However, no specific permits involving misuse of this criterion were identified.

NAAQS Protection--

5. What emissions baseline does the agency require to be used to evaluate the impact on the NAAQS of new and modified sources?

a. 2% Allowable emissions modeled exclusively

b. 47% Modeled allowable emissions from proposed source and added the monitored background air quality

c. 45% Other

d. 6% Not Applicable

Almost half of the audit agencies chose "b" to describe the emissions baseline that they use for NAAQS analyses. Many agencies chose a combination of the answers in order to describe more closely the procedure that they use. When combinations were chosen, it was assumed that "c" was the appropriate answer. When "c" was chosen or interpreted to be the appropriate response, it typically meant that modeling was used to estimate not only the proposed source but existing sources as well. Then, monitored background data were added to the modeled results. Concerning the modeling of existing sources, the respondents were fairly evenly divided between using a source's allowable emissions or some form of an actual emissions estimate (e.g., "annual average," "worst case actual," "actual operating conditions").

Two agencies identified "a" as their response; one was without comment. Comments from the other, however, suggested that "c" was the proper response because monitored background was added to modeled allowable emissions from the proposed source and existing sources. Four agencies answered "not applicable" because ambient impact analyses were typically handled by another agency.

	Yes	No
6. Does the agency routinely evaluate the impact of minor source construction?	44%	56%

Although a larger number of agencies do not routinely evaluate minor source impact than those who do, many of the negative respondents indicated that minor sources are reviewed for ambient effects on a case-by-case basis when they are suspected of causing a problem. However, in at least five agencies, it was suggested that minor sources rarely undergo air quality review.

Three agencies were noted for their exemplary programs for minor source review to protect the NAAQS.

	Yes	No	NA	NR
7. Does the agency's ambient impact analysis provide adequate protection against the development of "hot spots?"	73%	15%	6%	6%

Preliminary indications suggest that 45 agencies give adequate protection to ambient "hot spots," although two of these agencies were advised to alter or increase their receptor sites to assure that high concentrations are being adequately modeled. Five agencies were found to have deficiencies based generally on a failure to consider nearby sources in addition to the proposed source being modeled.

Of the four that did not respond to the question, three indicated that they did not understand what a "hot spot" was, despite the explanations contained in the FY 1984 NAAS guideline. It therefore appears that these respondents either did not receive the guideline or failed to adequately review it. This problem appears to have occurred in a significant number of instances throughout the audit.

Dispersion Models--

	Yes	No
8. Does the agency use adequate models to carry out the ambient impact analysis?	61%	39%

This question is particularly difficult to assess because of the variety of narrative responses contained in the audit reports. The results suggest that most agencies use, or require the use of, EPA reference models in most modeling experiences. However, the audits indicate problems that go beyond simply the use of adequate models. Consequently, the various problems identified are factored into the summary of responses above.

In addition to several cases where an inappropriate model was applied, other potential problems were identified. These include inadequate documentation to determine whether the proper procedures are followed, failure to demonstrate equivalency of models being used, failure to routinely require a modeling analysis when deemed necessary, inability to run refined models as needed, inadequate consideration of receptor sites, and failure to identify worst case meteorological conditions.

	Yes	No
9. Does the agency perform an independent, internal review of the modeling analysis contained in the permit analysis?	60%	40%

The responses to this question suggest that while most agencies use the appropriate models, there is a significant portion that does not adequately review the modeling analysis submitted by the applicant. Four general types of problems have been identified in this area: seven agencies do not adequately review the analyses; six agencies may review the applicants' analyses but either cannot or do not replicate the results as needed; eleven agencies either cannot or do not review the analyses as needed; and, in one agency, the results of the ambient impact analyses are not always adequately considered in the final permit restrictions.

H. EMISSIONS OFFSET REQUIREMENTS

Emissions offset requirements apply to all major construction that occurs in nonattainment areas. Agencies that implement the new source review program in nonattainment areas are expected to adhere to criteria consistent with the requirements under Part D of the Clean Air Act. The objectives of this portion of the audit are (1) to assure that agencies are requiring, where appropriate, adequate emissions offsets as a prerequisite to major construction in designated nonattainment areas; and (2) to assure that offsets are being obtained in a manner consistent with approved demonstrations of NAAQS attainment and interim reasonable further progress (RFP).

Two additional questions concerning the performance of emissions offsets were asked so as to gain information on an issue that is not clearly covered under the Clean Air Act requirements or EPA regulations.

Enforceability--

	Yes	No	NA	NR
1. Does the agency require that all offsets be Federally enforceable?	70%	6%	19%	5%

Forty-five agencies indicated that they do require Federally enforceable offsets, while two agencies responded only that their offsets must be "enforceable." There is some question as to what this means, however, because both agencies are known to have approved SIP's that require Federally enforceable emissions offsets. On the other hand, two agencies responding affirmatively to the question were found to have emissions banking systems containing emissions credits that are not Federally enforceable.

Some of the answers suggest that the question was not clearly understood by some agencies. In at least one case, an agency with no NSR responsibility answered "yes," thinking that the question pertained to PSD netting situations. Several others who responded "not applicable" did have NSR programs but have not issued any offset permits. One agency answered "not applicable" because they have no nonattainment areas, but the agency is in fact known to have a nonattainment area.

Consistency with RFP--

	Yes	No	NA	NR
2. Does the agency routinely ensure that emissions offsets are not otherwise needed to show RFP or attainment?	62%	5%	30%	3%

Four respondents answered "no," but one response was changed to "not applicable" because the respondent clearly misunderstood the intent of the question. A greater number of respondents answered "not applicable" to this question than the preceding one for a variety of reasons, including some which indicated that no offset permits had been issued. In such situations, it would have been preferred that those respondents indicate their policy regarding this issue. As a result, EPA does not feel that adequate feedback was given on this question.

	Yes	No	NA	NR
3. Does the agency's offset requirement cover other emissions increases since the last offset review?	50%	14%	31%	5%

Thirty-two of the audited programs address area and minor source growth either through emissions offsets, required before major source construction is approved, or through an accommodative SIP. A high percentage answered "not applicable," giving reasons such as: area subject to ban, no offset regulations, no nonattainment areas, and no offset permits issued. Two agencies that claimed no nonattainment areas are known to have them.

Timing of Offsets--

	Yes	No	NA	NR
4. Does the agency require that offsets occur on or before the time of new source operation?	72%	1%	23%	4%

According to the responses, all emissions offsets must occur before the new sources commence operation. However, one audit revealed problems with an agency's regulations with respect to the timing of offsets. No further comments were provided to explain what the specific problem was. Four affirmative responses were changed to "not applicable" because of the existence of construction bans within their jurisdictions.

	Yes	No	NA	NR
5. Is the effective date of the offset documented in the permit file?	58%	3%	31%	8%

Two agencies answered "no." One indicated that the date of the offsets could not always be documented in the permit file because the offsets were to occur in the future. The other did not document the date in the permit file but documentation was provided in a separate file. Details of the procedure were not provided. The number of agencies answering "not applicable" increased over the previous question mainly because some agencies indicated that no offset permits had been issued. Some agencies answered "yes" even though they had issued no offset permits. These answers were left unchanged because they were taken as an expression of the agencies' intent in the absence of actual experience.

	Yes	No	NA	NR
6. Does the agency allow offsets resulting from early source shutdowns or production curtailments?	63%	9%	19%	9%

Thirty-nine responded "yes" to allowing offsets that result from early source shutdowns or production curtailments; one agency allows offsets only for production curtailments. Only nine agencies indicated that no such offset credits were allowed. In general, shutdowns and production curtailments that occur before the date of the new source application should not be allowed. The findings suggest that there may be a problem which should be further explored.

Offset credit is allowed, however, in accordance with specific criteria in cases where the new source (unit) is a replacement. This is the focus of the next audit question.

	Yes	No	NA	NR
7. Are offsets granted in accordance with EPA shutdown criteria?	55%	9%	27%	9%

Of the 39 agencies allowing offsets resulting from early source shutdowns or production curtailments, 88 percent report that they follow EPA's shutdown criteria. However, 15 percent of these agencies report that they do not adhere to EPA shutdown criteria. No reasons or justifications for this discrepency were discernable from the audit reports. However, these responses do indicate a need for further investigation in this area. Most agencies responding "not applicable" related lack of permitting experience or absence of offset regulations as the basis for their response.

Permanence of Offsets--

8. Under what conditions would emissions offsets not be considered permanent?

39% - Under no conditions
5% - If nonattainment area becomes attainment
30% - Other
17% - Not applicable
9% - No response/No policy

9. What type of permit review would be required pursuant to a SIP relaxation involving emissions offsets?

9% - Not allowed
53% - Other (Some type of review generally stated)
17% - No response/No policy
21% - Not applicable

I. PERMIT SPECIFICITY AND CLARITY

The final phase of the new source review audit focused on the policies and practices involved with the actual issuance of permits by State and local agencies. The objectives of this part are to determine whether the permits being issued have conditions which are clear, concise, and enforceable, and to determine the extent to which special conditions are being used.

Source Identification--

	Yes	No	NA
1. Does the agency identify all emissions units and their allowable emissions on the final permit(s)?	74%	23%	3%

This question was intended to help EPA determine whether agencies made an effort to identify an allowable emissions limit for each affected emissions unit, rather than "bubbling" the source emissions for a particular pollutant under a single or composite emissions limitation. This latter practice is of questionable enforceability. Unfortunately, the question was ambiguously worded, and some respondents based their answer on whether the emissions limitations were actually contained in the final permit, which is one of the concerns of audit question 3 below. In fact, sometimes opposite answers were accompanied by the exact same explanation.

In an attempt to properly interpret the responses, nine were revised in order to place the emphasis on the agencies' intentions to specify emissions limitations for individual emissions units. That is, if it appeared that an agency did identify all of the affected emissions units and their corresponding allowable emissions, then no attempt was made to assess whether the information was identified in the permit, incorporated by reference from the regulations, or contained in the permit application itself. Based on the revision of some responses, at least 14 agencies are believed not to routinely identify all emissions units and their allowable emissions.

Permit Conditions--

	Yes	No	NA
2. Does the agency have an established format detailing the compilation of special terms and conditions?	77%	18%	5%

Forty-eight agencies indicated the use of some type of format for compiling special terms and conditions. It is assumed that such terms and conditions are typically added to the standard permits conditions as appropriate for each permitted source. Where comments were provided, it was clear that the question was being answered in two different ways: some agencies identified methods used to incorporate conditions within the permit, e.g., permit issuance letter, permit process memo, append to operating permit. On the other hand, others identified formats used to maintain a list of conditions in-house. From such lists, appropriate conditions could be selected for different permits. One effective technique that is being used successfully by at least two agencies is to store the conditions on a word processor. Then the permit engineer simply identifies the appropriate conditions for a particular permit rather than having to write them out in their entirety.

3. Are the allowable emissions rates stated or referenced adequately in the permit conditions?

	Yes	No	NA
a. Clear and precise averaging periods	88%	9%	3%
b. Emissions rates consistent with acceptable measurement procedures	89%	8%	3%
c. Design, equipment, work practice, or operational standards used where appropriate	91%	6%	3%

Where stated or referenced in the permit, allowable emissions rates are generally expressed in an adequate manner in terms of clarity and enforceability. Seven agencies were found to have problems with emissions rates that lacked specific averaging periods, and five agencies do not always establish emissions rates that are consistent with acceptable compliance measurement methods.

A number of agencies did not always identify the allowable emissions rate in the permit. In at least eleven agencies, there was a tendency to omit emissions rates for certain pollutants. In one agency, for example, the audit found that pollutants other than TSP and SO_2 were generally not limited in the permit.

	Yes	No	NA
4. Are the compliance test methods stated or referenced in the permit terms and conditions?	52%	45%	3%

The audit results indicate that there is no strong tendency to state or reference compliance test methods on the permit. Twenty-eight agencies do not routinely do so. In at least 12 cases, where the respondent answered that compliance test methods were stated or referenced on the permit, EPA auditors found examples where this was not accomplished.

The implications of this finding are not clear. Agencies that answered negatively often indicated that their regulations included requirements for compliance testing to be done. In one case, for example, the respondent referred to a 30-day intent to test requirement, indicating that this was "adequate to address any questions concerning test methods and procedures." Other responses indicated that, while not done routinely, compliance test methods are stated in the permit as needed--usually only for major sources.

	Yes	No	NA
5. If a source's calculated potential to emit is based on less than full design capacity and continuous, year-round operation, are all limiting restrictions clearly identified in the permit?	63%	34%	3%

Based only on the answers provided in the questionnaires 88% responded affirmatively to this question. However, numerous answers had to be reinterpreted as a result of the EPA audit findings that revealed numerous problems with actual permits issued. Permits issued in at least 22 agencies do not consistently include permit conditions identifying operational and design limitations that are necessary to restrict a source's potential to emit. The frequency of occurrence varied from one agency to another, but oftentimes the sources involved had been able to avoid major source review because of their lower potential to emit. Without the appropriate permit conditions ensuring that such lower potential is adhered to, these sources should have undergone major source review. In two agencies, such permits were issued in areas subject to a construction moratorium. More often, however, PSD review was affected.

	Yes	No	NA
6. Is the information accompanying the permit application considered to be enforceable?	87%	10%	3%

Most agencies believe that the information submitted by the applicant is an enforceable part of the permit. Six agencies answered that such information is not enforceable. Based on some of the comments provided, it would appear that the existing regulations that govern State and local agency permitting procedures vary in terms of their clarity on this issue. One particularly interesting comment indicated that, with respect to the agency responding, the information contained in a permit application is "generally enforceable as a description of the operation covered by the permit." The comment emphasized, however, that emissions data and representative operating data are not considered enforceable unless they are reiterated as permit conditions.

V. COMPLIANCE ASSURANCE

A. INTRODUCTION

The compliance assurance element of the FY 1984 National Air Audit System (NAAS) was designed to examine State and local programs which are responsible for the compliance of sources subject to requirements of State implementation plans (SIP's) and, where delegated, new source performance standards (NSPS) established under Section 111 of the Clean Air Act and national emission standards for hazardous air pollutants (NESHAP) established under Section 112. Of the several hundred thousand regulated stationary sources in the nation, there are approximately 30,000 sources in these categories for which EPA and State and local air pollution control agencies share a concern about compliance status and associated enforcement activities. Compliance activities directed to these sources formed the primary basis on which each audit was conducted.

The major parts of the compliance assurance element include performing a pre-visit assessment by examining source data reported to EPA by State and local agencies, reviewing source files, and conducting overview inspections. According to the NAAS guidance, the EPA Regional Offices were to prepare for the compliance assurance element of each audit by obtaining Compliance Data System (CDS) retrievals on inspection frequency, compliance rates, and enforcement activity. The Regions were then to analyze the CDS data for progress in meeting inspection commitments, source compliance status, identification of long-term violators and associated compliance activity, identification of long-term compliers and associated surveillance activity, and identification of operating NSPS sources without the required 180-day performance test. Finally, based on this CDS analysis, the Regions were to prepare a summary of each compliance program and send it to the State or local agency before the visit. The analysis could have taken the form of a questionnaire for that agency or could have been a statement of findings to be discussed for completeness and accuracy during the visit. The pre-visit assessment was also designed to help in identifying the files to be reviewed during the on-site visit.

The next major part of each audit was the on-site visit. This visit centered on a discussion of the findings in the pre-visit assessment and on review of 15-20 source files. The files to be reviewed were to consist of a mixture of the three air programs (SIP's, NSPS and NESHAP, assuming the latter two programs were delegated). A file review checklist was developed to ensure consistency in how the file reviews were to be implemented. The goals were to see if the files contained a reasonable profile of the source, contained written documentation to support the compliance status reported to EPA, and contained documentation to show that violators are expeditiously returned to compliance. The State and local audit reports were envisioned to include a discussion of both the pre-visit assessment and the status of the files.

The final component of the compliance audit was to be a program of overview inspections conducted by EPA of 2-3 percent of the sources in the CDS inventory. The purpose was to verify the compliance status of a source as reported to EPA and to observe inspection practices to see if there were areas where EPA could increase performance through technical assistance. Due to the timing of this year's initial audits, implementation of this program was expected to occur after the on-site visit. Where these overview inspections occurred before the drafting of the audit reports, it was expected that the process would be described and the results discussed with recommendations, where appropriate. More complete results of the overview inspections component will be discussed in the FY 1985 audit reports.

The compliance assurance audit included 65 State and local audits (3 local agency audits did not cover compliance). Since the compliance assurance element of the NAAS did not have a standardized questionnaire, five questions were developed as a guide in developing a summary of the findings in the State and local audit reports. These questions represent the key elements of the compliance portion of the audit, and provide a uniform basis to do a national assessment of the compliance and enforcement programs.

B. MAJOR FINDINGS AND CONCLUSIONS

Many States and locals showed one or more strong points characteristic of a successful air compliance program, such as high source compliance rates supported by high inspection frequency rates, performance of all required NSPS source tests, expeditious resolution of violators, and few long-term violators. These activities were adequately reflected and validated by the national CDS. Other States had source files that were for the most part well organized, up-to-date, and complete, reflecting a reasonable profile of each source.

However, the compliance audits also revealed that several States and locals, to a varying extent, have weaknesses in three areas vital to a strong and effective compliance program. First, files generally do not contain strong and verifiable information reflecting a reasonable profile of each source. Second, many inspection reports are of poor quality (no mention of operating or emission parameters or pollutants emitted). It is unclear whether the problem is with the inspections themselves or just the reports. Third, the reviewed agencies' enforcement efforts are not always effective in reducing the number of long-term violators by expeditiously returning documented violators to compliance.

State and local agencies have already addressed many of the problems found during the audit which should be reflected in the FY 1985 audit. EPA, working with the State and Territorial Air Pollution Program Administrators(STAPPA) and the Association of Local Air Pollution Control Officials (ALAPCO), has recently defined performance criteria in expeditiously taking action against violators through a "timely and appropriate" guidance document. EPA, STAPPA, and ALAPCO are also studying means to improve the inspection program for quality and coverage and to assure that the national CDS has current valid source information.

The remainder of this chapter addresses these findings in more detail. The aforementioned five questions, which represent the key elements of this compliance audit, are discussed in each appropriate part.

C. PERIODIC REVIEW AND ASSESSMENT OF SOURCE DATA

To assess the adequacy of State and local compliance programs, the EPA Regional Offices continually review source compliance status and inspection information submitted by the audited agencies and reflected in CDS for the SIP, NSPS, and NESHAP programs. The attached Figures 1-6 provide a compliance snapshot of all reviewed State and local air compliance programs as of March 31, 1984 (the time when most audits were being carried out by the Regional Offices).

As shown in the three pie charts in Figures 1-3, the national compliance picture for the three air programs is very respectable. The subsequent three bar charts depict, by air program, the compliance range, inspection range, and the range of the number of long-term violators for all States and locals audited. As shown, compliance rates for SIP, NSPS, and NESHAP sources range from a low of 50 percent in one jurisdiction to a high of 100 percent in another, with median figures near the mid-90th percentile. Inspection rates range from 0 percent to 100 percent, with median figures between 62 percent and 80 percent for the three programs. The number of long-term violators (defined for this audit as two consecutive quarters or more) in each jurisdiction was largest for Class A1 SIP sources, ranging from a low of one in one agency to a high of 82 in another, with a median figure of three to four sources per jurisdiction. Several of the audited agencies have expressed concern about the accuracy of the data currently in CDS, and EPA and the State and local agencies have committed to ensure inclusion in CDS of the most valid information.

The following question and discussion is the first of the five questions developed as a guide for summarizing the findings in the audit reports.

(1) Did the audit report discuss the findings of the pre-visit CDS program assessment (including the agency's reaction), and provide an overall statement on the condition of the air compliance program revealed by that CDS analysis?

A review of the 65 audit reports shows that some form of pre-visit assessment was done by the Regions for at least 55 State and local programs prior to each audit (the other ten reports did not discuss whether a pre-visit CDS program assessment was performed or give an overall statement on the condition of the air compliance program). Thirty-four of these reports contained an overall statement about the particular compliance program based on the CDS analysis:

- Four air programs were considered very good.
- Twenty-six air programs were considered adequate (meeting most Clean Air Act requirements).
- Four air programs were termed seriously deficient.

The remaining 21 audit reports made no definitive statement on the air program based on the CDS assessment, but positive comments were made in 8 of these reports, such as "inspection rates are very good" and "compliance rates are good to excellent." For another 9, negative comments were made such as "90-day time lag in reporting violations to EPA" and "numerous long-term violators."

Careful study of the audit reports for the four agencies with "very good" air compliance programs shows several elements contributing to the success of each compliance program. In general, these agencies, based on the CDS analysis:

- routinely complete nearly all the required inspections for SIP sources, and NSPS and NESHAP sources where delegated,
- have compliance levels for Class A SIP sources consistently above 90 percent with recent inspections to support this level, and
- address, in a timely manner, sources found to be in violation of applicable emission limits or permitting requirements resulting in few, if any, long-term violators (greater than 180 days).

It seems likely that other States have compliance programs as good as these four, but this was not readily discernable from the description of the programs in the audit reports.

To summarize, 38 (58 percent) of the 65 State and local compliance programs were found by the Regions to be either adequate or very good according to the CDS pre-visit analysis, and 13 (20 percent) were judged either less than adequate or seriously deficient in at least some element of the program. It was not possible to assign an overall description of programs from the other 14 (22 percent) reports. This initial effort identified many good programs and pointed out other areas where the States and locals and EPA should work together to improve their compliance programs.

D. FILE REVIEW

The following questions and discussions pertain to the portion of the audit that addressed file reviews:

(2) Did the source files reflect a reasonable profile of the sources?

Of the 65 audit reports reviewed, 63 contained file review information. Thirty-eight (38) of these indicated that each file reflected a reasonable profile of the source, which means it contained the following information: source compliance status based on recent inspection or source test, an identification of all air program regulations to which the source is subject and, within the inspection report, operating parameters, point sources, and pollutants emitted by the facility. Some common reasons cited in the 25 audit reports where the files were considered deficient were: inability to determine source compliance status from file contents, no indication of which air program regulations to which the source was subject (SIP, NSPS, NESHAP), missing inspection report, or poor quality inspection report (no mention of operating or emission parameters, point sources, or pollutants emitted by facility).

(3) Did the files contain adequate written documentation to support the CDS compliance status?

Thirty-nine (62 percent) of the 63 audit reports indicated that files reviewed contained some written documentation of compliance status to support CDS. The other 24 (38 percent) audit reports either cited a lack of any compliance information in the files or showed information in the files which conflicted with CDS. Most of these 24 reports were for the agencies which were identified as having deficient files in the preceding question.

(4) Are violations documented and pursued by the Agency to expeditiously return a source to compliance?

Forty-four (70 percent) of the 63 audit reports indicated that violations are documented and pursued to expeditiously return a source to compliance. The other 19 reports indicated that some sources were not being expeditiously returned to compliance, leading to a number of long-term violators (greater than 180 days) or untimely, protracted enforcement actions.

E. OVERVIEW INSPECTIONS

The following question and discussion pertains to the portion of the audit that addressed overview inspections:

(5) Did the Region conduct an overview inspection program in each agency? Summarize the procedure including how sources were selected, inspection procedures (State or local participation), and inspection results.

As noted earlier, the short time available for NAAS implementation in FY 1984 limited the opportunity for Regional Offices to perform and evaluate this aspect of the audit before the audit summary reports were written. Some Regions carried out an overview inspection program in a few of their jurisdictions which involved joint EPA-State inspections. However, the audit reports have no details about source selection, specific inspection procedures, or inspection results. This will be covered more completely in the FY 1985 compliance assurance audit program.

FIGURE 1
COMPLIANCE BREAKDOWN OF SIP PROGRAMS
CLASS A1 SIP SOURCES

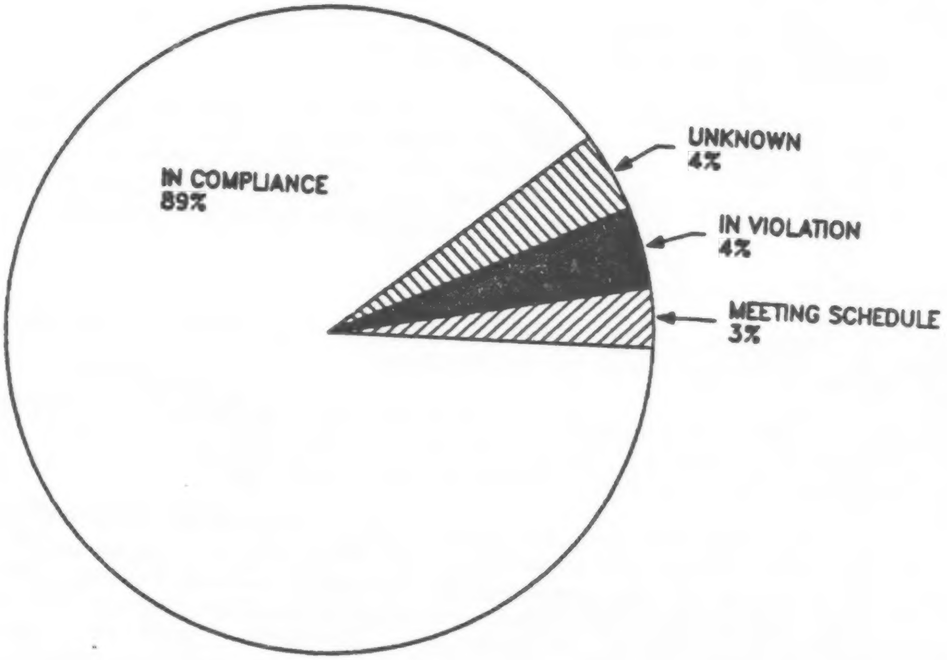


FIGURE 2
COMPLIANCE BREAKDOWN OF NSPS PROGRAMS
NSPS SOURCES

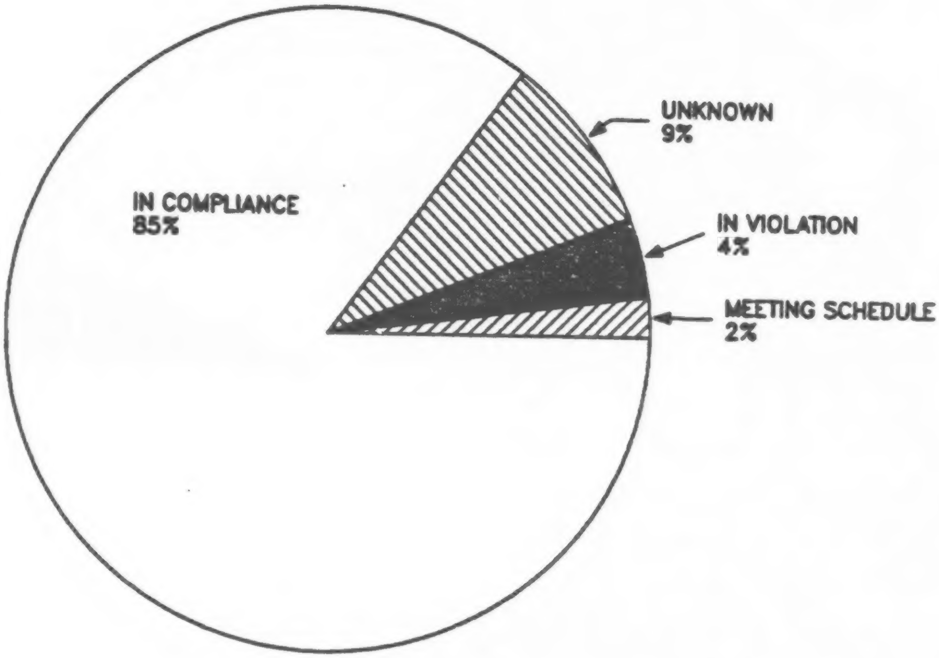


FIGURE 3
COMPLIANCE BREAKDOWN OF NESHAP PROGRAMS
NESHAP SOURCES

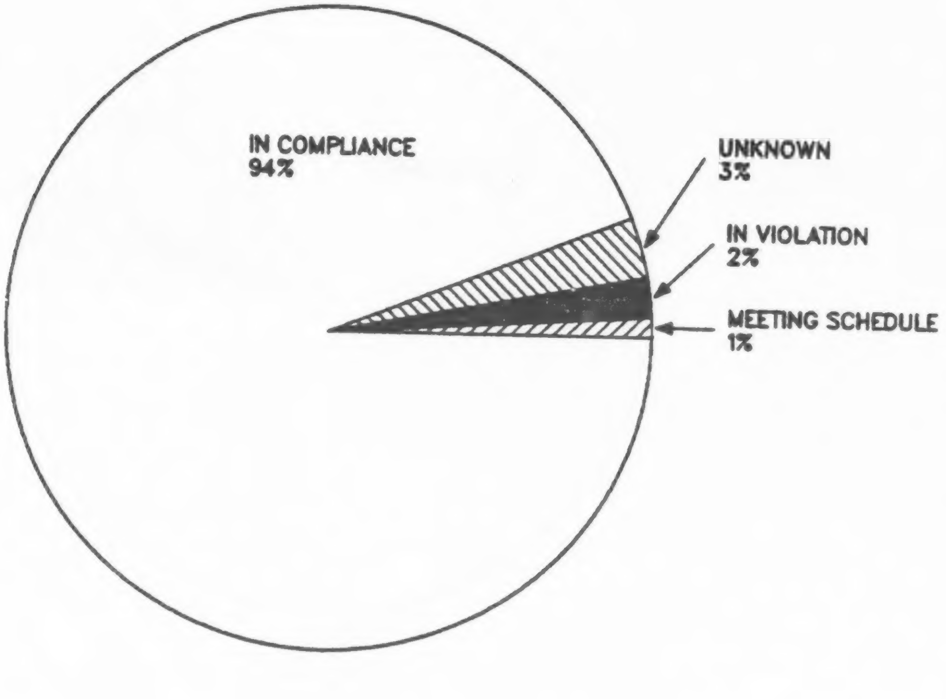


FIGURE 4
STATE AIR COMPLIANCE STATISTICS
CLASS A1 SIP SOURCES

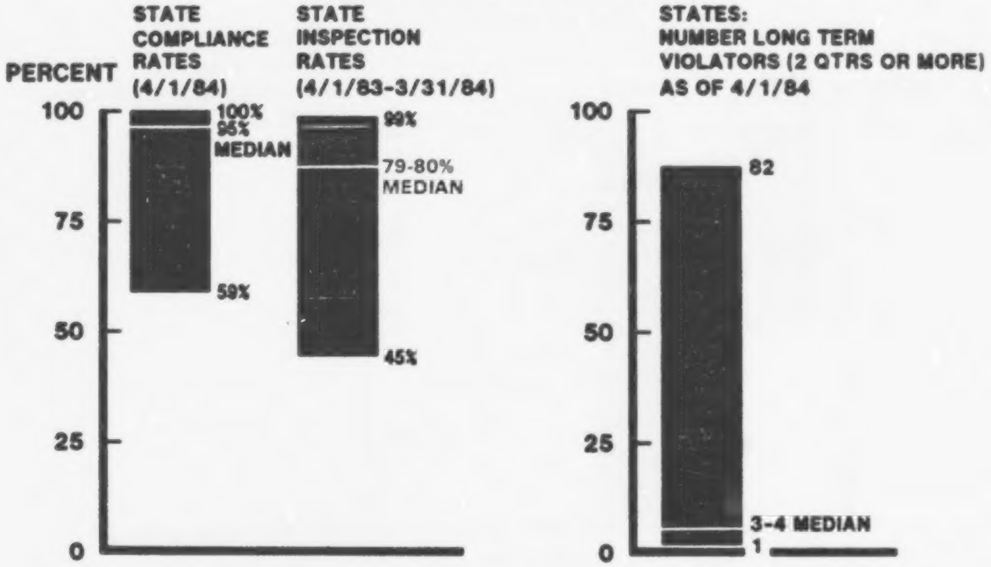
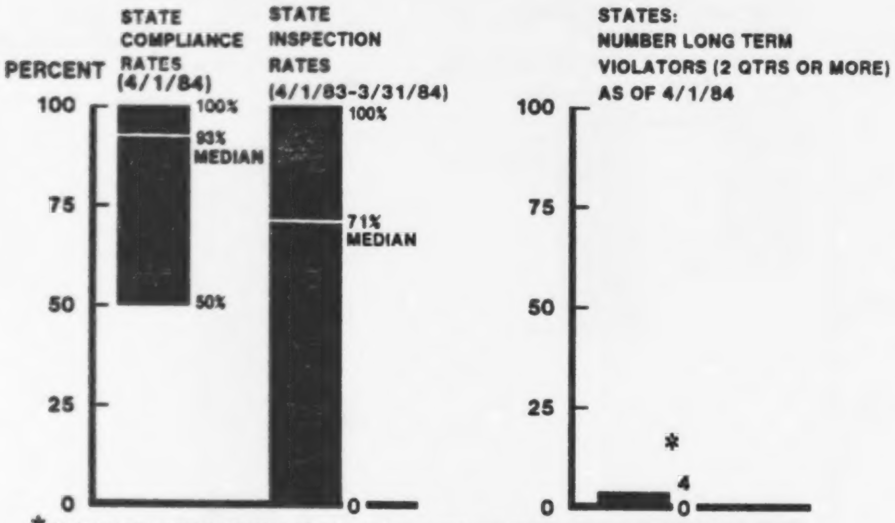
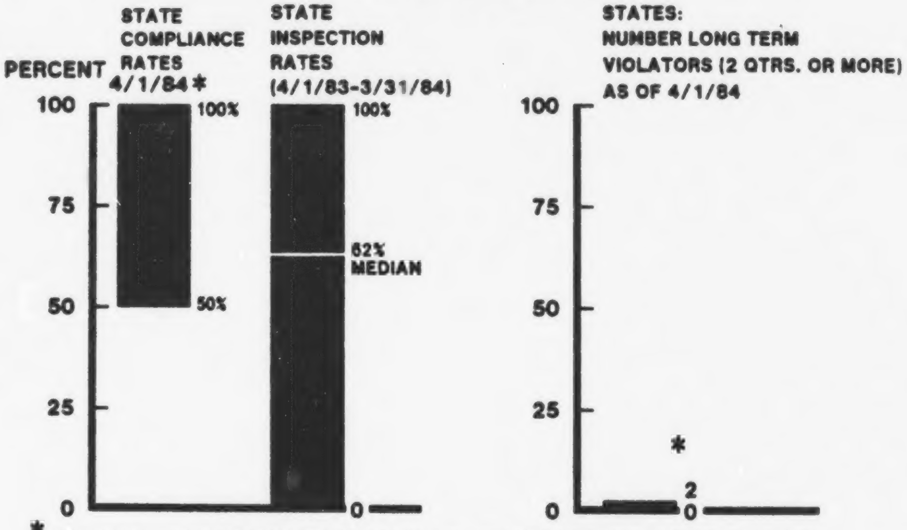


FIGURE 5
STATE AIR COMPLIANCE STATISTICS
NSPS SOURCES



* DATA FOR THIS BAR CHART DO NOT ALLOW CALCULATIONS OF MEDIAN FIGURE.

FIGURE 6
STATE AIR COMPLIANCE STATISTICS
NESHAP SOURCES



* DATA FOR THIS BAR CHART DO NOT ALLOW CALCULATIONS OF MEDIAN FIGURE.

VI. AIR MONITORING

A. INTRODUCTION

In May 1979, EPA promulgated air monitoring and reporting regulations for State implementation plan (SIP) purposes which significantly revised the previous 1971 regulations. The major elements of the revised regulations are as follows:

- Provides for fixed and movable monitoring sites.
- Establishes monitoring network design and siting criteria.
- Requires that reference or equivalent methods be used.
- Imposes an annual network review.
- Requires an approved quality assurance program.
- Provides for the quarterly reporting of all National Air Monitoring Stations (NAMS) data and the annual summary reporting of State and Local Air Monitoring Stations (SLAMS) data.

An effective air monitoring program includes audits as an integral part of its overall activities. Consequently, the May 1979 Federal monitoring regulations required State or local agencies operating SIP networks to participate in EPA's national performance audit program and to permit an annual EPA system audit of their ambient air monitoring program. In view of this requirement, EPA in July 1980 issued detailed and lengthy guidance for Regional Office use on conducting system audits of State and local agencies. The guidance was issued in the EPA report, "Quality Assurance Handbook for Air Pollution Measurement Systems, Volume II - Ambient Air Specific Methods," (EPA 600/4-77-027a.)

In late 1982 and early 1983, as part of the National Air Audit System work group efforts, the Regional Offices were surveyed to compile information on how each Region conducted audits of State and local air pollution control programs. Specific aspects of audits covered in the survey included selection of topics, format, depth of audit, use of audit results, and tracking of corrective actions. With regard to air monitoring, EPA found that the monitoring regulations in 40 CFR Part 58 did form the basis for all Regional systems audits. Of the ten Regions, four indicated they used the criteria found in the Quality Assurance Handbook Volume II cited above. Other Regional Offices developed their own criteria and indicated that some of the criteria in the Quality Assurance Handbook were not entirely relevant to their States' situations. Because most Regions were auditing air monitoring programs based on their own criteria, it was decided jointly representatives of the State and Territorial Air Pollution Program Administrators (STAPPA), the Association of Local Air Pollution Control Officials (ALAPCO), and EPA that air monitoring would be one of the four major areas to be included in the FY 1984 audit program.

Several major problems were encountered in preparing an adequate and timely air monitoring questionnaire for use in FY 1984. One problem was that the existing EPA system audit guidance in the Quality Assurance Handbook was in need of major revision, but because of its complexity and length it could not be completely revised for use in FY 1984. Another problem was that the purpose of the FY 1984 audit questionnaires, the criteria for preparation, and the use of the audit results were not sharply focused at the time of preparation. Faced with these difficulties, it was recognized from the outset that the audit questionnaire developed by the air monitoring audit committee would only serve as an interim document for conducting system audits in FY 1984.

The air monitoring questionnaire developed for use in FY 1984 was intended to provide an overview and summary assessment of an ambient air monitoring program. On the other hand, it was not intended to replace the detailed system audit guidance contained in the Quality Assurance Handbook. During FY 1984, EPA proceeded to develop a new questionnaire and a systems audit protocol for the Quality Assurance Handbook. These materials will be reviewed and approved by the air monitoring audit committee as well as by State and local air pollution control officials. It is expected that the new questionnaire and systems audit protocol will be completed in time for use in FY 1985.

Fourteen major questions asked during the air monitoring systems audit. For ease of review, these 14 questions have been separated into the four categories of quality assurance; network design and siting; data handling; and facilities, staff, and equipment. Each of these areas are described in detail below following the discussion of major findings and conclusions.

B. MAJOR FINDINGS AND CONCLUSIONS

The 63 air monitoring audit questionnaires received by EPA covered 48 States, the District of Columbia, 2 U.S. Territories, and 12 local agencies. Based on the monitoring audit results and periodic SLAMS/NAMS status reports issued by EPA, it is concluded that State and local agencies have successfully established and maintained their respective SLAMS/NAMS networks of approximately 4888 pollutant monitors. Overall, at any particular time, about 97 percent of these monitors are operating and in compliance with the 40 CFR 58 requirements for network design, siting, and instrumentation. This compares favorably with the audit findings that 94 percent of the agencies are meeting these regulations. The remaining three percent of the monitors reflect monitors that are discontinued or being relocated because of lost leases, instrument repairs, construction projects, or the like.

The audit reports clearly show that timely data submission (within 90 days of the end of each quarter) is a problem for approximately 32 percent of the agencies involved. The reasons appear to be related to staff shortages, the need to upgrade computer capabilities, the length of analytical time required to perform lead analyses, and the need for additional data validation time. Several of the States are in the process of upgrading their computer capabilities which will lead to more timely data submittal. Another action currently in progress that will effect the timeliness of data submittal is a proposed regulatory change. This proposal will increase the time limit for submittal from 90 to 120 days after the end of the calendar quarter in which the data were collected. This change is being proposed because EPA has found that a 120-day period is more reflective of national data needs.

Approximately 34 percent of the agencies had trouble maintaining a 75 percent data capture rate for their SLAMS/NAMS sites. It was not possible to determine from the survey whether the missing values were due to instrument problems or data submission problems. This problem does need additional study. On the positive side, 66 percent of the agencies indicated that at least 90 percent of their sites are meeting the 75 percent completeness criteria.

The survey indicated that many agencies were experiencing problems related to old or worn out monitoring equipment. This need was independently confirmed by a STAPPA/ALAPCO equipment survey in 1983. EPA has recommended that a portion of the Section 105 air grants be allocated to replacement of some ambient instrumentation.

Based on regularly occurring surveys performed by EPA, all States have an approved Quality Assurance Plan. The national audit survey indicates that many States and local agencies are in the midst of modifying and upgrading their Quality Assurance Plans due to revised Federal reference procedures or because some operational procedures were not complete or entirely adequate.

With respect to annual network reviews and the annual SLAMS Air Quality Data Report, the survey indicates only minor problems and these should be easily remedied administratively.

The precision and accuracy audit results appeared as a substantial problem. However, it is believed that the largest part of the problem could be attributed to the particular question asked because only 48 percent of the respondents provided an appropriate response. Based on available data, it can be concluded that most agencies are providing the required precision and accuracy data and over the last 3 years are improving the data quality. It appears the majority of the agencies should meet the precision and accuracy goals established in the survey in the next few years. An effort to remove the ambiguity of this question and other problem questions contained in the audit questionnaire is underway. The new questionnaire will attempt to minimize the resubmission of massive blocks of information already within EPA's possession and limit questions to one subject area.

C. QUALITY ASSURANCE

Quality assurance consists of two distinct and equally important functions. One function is the assessment of the quality of the monitoring data by estimating their precision and accuracy. The other function is the control and improvement of the quality of the monitoring data by implementation of quality control policies, procedures, and corrective actions. These two functions form a control loop in that when the assessment function indicates that the data quality is inadequate, the control effort must be increased until the data quality is acceptable.

With this in mind, the following questions were asked regarding quality assurance:

Quality Assessment

- How do the precision and accuracy of the Agency's instruments compare with the goal of plus or minus 15 percent for precision and plus or minus 20 percent for accuracy?
- Does the Agency participate in interagency audits?
- Does the Agency participate in the National Performance and System Audit Program required under 40 CFR 58 Appendix A?

Quality Control

- Does the Agency have a quality assurance manual?
- Are the Agency's monitoring practices consistent with the quality assurance manual?
- Are corrections/deletions to preliminary ambient air data performed according to the quality assurance manual?
- Is the basis for revising final ambient air data formally documented?
- Does the Agency provide quality assurance measures for noncriteria pollutants?

A total of 63 audit questionnaires were received by EPA which addressed the topic of quality assurance. Responses were obtain from 48 States, the District of Columbia, 2 U.S. Territories, and 12 local agencies. The District of Columbia and the 2 territories are counted as States in this section of the report.

In response to the first question regarding how the Agency's instruments compare to the 95 percent probability limits of plus or minus 15 percent for precision and plus or minus 20 percent for accuracy (plus or minus 15 percent for hi-vol accuracy), less than half of the responses (30/63 or 48 percent) reported probability limits for all pollutants for both years (1981 and 1982). In some cases, minor omissions occurred, such as excluding carbon monoxide (CO) accuracy or only reporting lead values for one year. In other cases, data were not reported at all, percentage values were reported, or only the highest probability limits in the 2-year period were reported.

There was little difference if the reporting was done by a State or local agency. Fifty percent of local agencies (6/12) reported precision and accuracy data for 2 years, while 47 percent (24/51) of State agencies reported precision and accuracy data for 2 years.

For those 30 agencies where precision and accuracy could be quantified, only 13 agencies were within the 95 percent probability limit goals for precision and accuracy for all pollutants for the 2 years requested. For those agencies which did not achieve the goal of plus or minus 15 percent for precision and plus or minus 20 percent for accuracy, precision was exceeded most often for sulfur dioxide (SO_2) (22 percent of all reported exceedances) while accuracy was exceeded most often by nitrogen dioxide (NO_2) (30 percent of all reported exceedances). Reported exceedances by percent for precision and accuracy are shown in Figures VI-1 and VI-2. The fewest reported exceedances for precision were for CO, while the fewest reported exceedances for accuracy were for total suspended particulate (TSP).

The precision and accuracy results presented above do not truly depict the actual precision and accuracy data submitted to EPA's data bank. The discrepancy between the precision and accuracy results reported on the audit questionnaire and those contained in the data bank can be attributed to the fact that the audit questionnaire is new, confusion over how to complete the questions, and reluctance on the part of the local or State agency to resubmit data previously reported to EPA. In view of these problems and the incompleteness of the questionnaire results, we have included precision and accuracy data summary statistics based on data contained in EPA's data bank. Table VI-1 depicts by pollutant the national percent completeness of precision and accuracy data. For example, in 1983 the precision and accuracy data reported ranged from 80 percent complete for NO_2 to 96 percent for TSP. Table VI-2 shows the 90th percentile lower and upper precision and accuracy 95 percent probability limits for CO for the years 1981-1983. For CO precision in 1983, there were 374 quarters of precision data submitted by State and local agency reporting organizations. Of the total, 90 percent were within upper and lower probability limits of minus 13 percent and plus 12 percent or meeting the goals of plus or minus 15 percent. For the other criteria pollutants, 65 to 75 percent of the data met the precision goals of plus or minus 15 percent and 80 to 90 percent met the accuracy goals of plus or minus 20 percent.

Concerning the question of an approved quality assurance manual, 92 percent of all State agencies, and 58 percent of all local agencies surveyed responded as having EPA fully-approved and updated quality assurance manuals. In general, the quality assurance manuals were acceptable except for one or two deficiencies. The deficiencies noted included lack of ozone transfer standard recertification procedures and the need for hi-vol sampler calibration procedures to be written in conformance with the December 12, 1982, Federal Register changes to the TSP reference method.

FIGURE 1

PRECISION

VALUES EXCEEDING PROBABILITY LIMITS

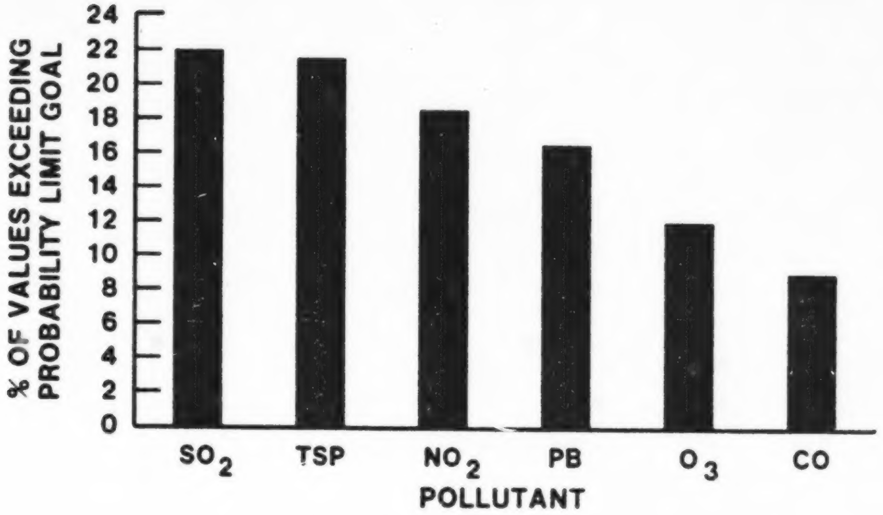


FIGURE 2

ACCURACY

VALUES EXCEEDING PROBABILITY LIMITS

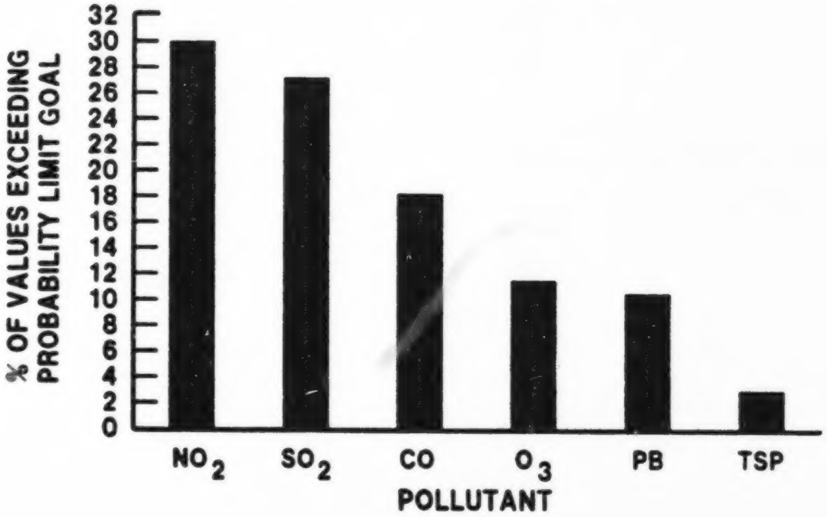


TABLE VI-1

PERCENT COMPLETENESS OF QUALITY ASSURANCE DATA (PRECISION AND ACCURACY)

Pollutant	1981	1982	1983
CO	77	89	87
SO_2	82	93	87
NO_2	56	72	80
O_3	83	89	88
TSP	94	97	96

TABLE VI-2

CARBON MONOXIDE PRECISION AND ACCURACY LIMITS MET BY 90 PERCENT OF THE SLAMS REPORTING ORGANIZATIONS

		Probability Limits (Percent)		
	Number	Lower	Upper	
Precision	296	-18	+17	1981
	346	-15	+16	1982
	374	-13	+12	1983
Accuracy Level 2	197	-18	+16	1981
	256	-14	+13	1982
	295	-13	+13	1983

However, not all agencies which had an approved quality assurance manual followed the procedures outlined in the manual. Twenty-nine percent of all agencies did not follow monitoring practices which were consistent with their approved quality assurance plan. Problems ranged from procedural inconsistencies to the lack of quality assurance for certain sites or criteria pollutants.

Concerning data corrections, 89 percent of all State and local agencies corrected preliminary ambient air data according to the quality assurance manual, while 88 percent of all agencies documented and maintained their basis for revising their final ambient air data. Generally, agencies which were deficient in the area of data correction did have documented procedures; however, they were not listed in the quality assurance manual.

Another important aspect of quality assurance is participation in audits on an independent or interagency basis. Of the 51 State agencies which were audited, 92 percent (47/51) participated in independent and/or interagency audits, while all local agencies participated. One Region reported that the States within the Region participated in field audits, but did not participate in lab audits. Similar to the independent or interagency audit participation, 92 percent of all State agencies participated in the National Performance and System Audit Programs required in Appendix A of 40 CFR Part 58. It should be noted that those agencies which did not participate in National Performance and System Audit Programs did participate in independent and/or interagency audits.

The final quality assurance question asked if quality assurance measures were provided for noncriteria pollutants. This question was very ambiguous, and results varied from State to State and Region to Region. Many questionnaires responded "yes" without describing which noncriteria pollutants were being monitored, other States understood this question to deal with air toxics, while still other States described whether the quality assurance measures employed were for nonmethane organic compounds (NMOC's), sulfates and nitrates, or acid rain. Forty-six agencies did provide quality assurance measures for noncriteria pollutants (73 percent), nine agencies reported they did not monitor for any noncriteria pollutants (14 percent), while 8 agencies (13 percent) did monitor for noncriteria pollutants without sufficient quality assurance measures.

D. NETWORK DESIGN AND SITING

Appendices D and E of 40 CFR Part 58 describe network design and siting criteria for State and Local Air Monitoring Stations (SLAMS) and National Air Monitoring Stations (NAMS), a subset of SLAMS. Stations which comprise SLAMS should be designed to meet one of four principal monitoring objectives:

- To determine the highest concentration of a given pollutant expected to occur in the area covered by the network;

- To determine representative pollutant concentrations in areas of high concentration and high population density;

- To determine the impact of significant sources on ambient air quality; and

- To determine general background pollutant concentration levels.

In addition to the above monitoring objectives from Appendix D, each site must comply with specific siting requirements of Appendix E.

With regard to network design and siting, three questions were asked:

- How many SLAMS (including NAMS) were in operation for each criteria pollutant?

- Was network design and siting in conformance with 40 CFR 58 Appendix D and E, and the Quality Assurance Handbook?

- Was the SLAMS network reviewed annually with each station being assigned a number in accorance with EPA's Storage and Retrieval of Aerometric Data (SAROAD) system, an operating schedule, a spatial scale, and a monitoring objective?

The first question was meant to serve as a cross-check to the SLAMS Status Report produced annually by EPA. In every case but one, the number of sites were reported. One State agency stated that monitoring was conducted on an individual district basis, and they did not keep records on the number of monitoring stations operated by local districts. Of those which responded, 84 percent corresponded closely with the 1983 SLAMS Status Report. It should be understood that the numbers do not remain stable because throughout the year a small number of sites are added, discontinued, or replaced for valid reasons (lost lease, building construction, or the like). However, there was a large discrepancy between the 1983 SLAMS report (see Table VI-3) and the air audit report for eight agencies. Of the eight agencies, six reported fewer sites (some significantly) while two reported more sites. It is believed that the problem could have been resolved if the question explicitly stated that a State was to include all SLAMS sites operated by local agencies within the States.

From the questionnaires, it was determined that 94 percent of all the agencies surveyed (59/63) reported that air monitoring network design and siting were in conformance with 40 CFR 58 Appendices D and E, and EPA's Quality Assurance Handbook. One questionnaire responded "unknown," while three agencies were not in conformance with design and siting criteria. The audit indicates that there are relatively few sites not in compliance with these requirements and all three agencies noted that corrective actions are in progress for those sites. The audit questionnaire compares closely with EPA's annual SLAMS status report which listed that about 97 percent of the 4888 SLAMS sites (including NAMS) were operating and complying with the monitoring and reporting regulations.

Similarly, 94 percent of all agencies surveyed reviewed their SLAMS network annually and ensured that SAROAD numbers were assigned, and there was an operating schedule, spatial scale, and monitoring objective. Four State agencies failed to do this. One agency reported no review since 1981, while another was scheduled to begin reviews in 1984. No comments were received about the other two States.

TABLE VI-3

NATIONAL SUMMARY OF AIR MONITORING STATIONS (1983)

POLLUTANT	SLAMS*	NAMS
TSP	2574	644
SO_2	583	222
CO	450	115
NO_2	298	58
O_3	612	216
Lead	371	107
TOTAL	4888	1362

*Includes NAMS

E. DATA HANDLING

States are required to submit to EPA an annual summary report of all ambient air quality monitoring data from all SLAMS monitoring stations as required by 40 CFR 58.26. In addition, 40 CFR 58.35 requires States to submit quarterly reports of all ambient air quality monitoring data from all NAMS sites to EPA. Appendix F to 40 CFR 58 describes how these data are to be submitted.

In order to determine if data were being submitted according to 40 CFR Part 58, five questions were asked:

- Does the Agency have staff and data processing facilities adequate to process and submit to SAROAD air quality data as specified in 40 CFR 58.35 and Appendix F?
- What fraction of the data is more than 45 days late?
- What fraction of the SLAMS sites reported less than 75 percent of the data?

- o Are the Agency's SLAMS instruments designated as reference or equivalent methods by EPA?
- o Does the Agency submit an annual summary report as specified in 40 CFR 58.26?

With regards to adequate staff and processing facilities needed to submit SAROAD data, 90 percent of the agencies had sufficient staff and facilities necessary to submit SAROAD air quality data as specified in 40 CFR 58.35 and Appendix F. As for those which did not have adequate staff or facilities, problems were mainly attributable to computer services and turn-around time on lead analyses. Twenty State and/or local agencies did submit at least a portion of their data more than 45 days late. The percentage of sites by agency which submitted their data late are shown in Figure VI-3. The figure shows that of the 20 agencies reporting late data, 2 agencies reported 100 percent of their data late, 8 agencies reported at least 30 percent of their data late, and 10 agencies reported up to 20 percent of their data late. The questionnaires indicated that some of the late reporting agencies are in the process of upgrading their computer services (new software and addition of some personal computers) which should improve this item. In addition to those improvements, EPA is proposing revisions to 40 CFR Part 58 to increase the reporting period from 90 days after the end of the quarter to 120 days, which should help this problem.

Only 13 agencies (21 percent) reported that all of their SLAMS sites achieved data recovery greater than 75 percent. Of those agencies which did not attain at least 75 percent data recovery, the fraction of SLAMS sites reporting less than 75 percent of data ranged from less than 1 percent to 41 percent. Figure VI-4 shows that 18 agencies reported that less than 5 percent of their sites had less than 75 percent data recovery, 11 agencies reported between 5 and 10 percent of their sites with less than 75 percent data recovery, 1 agency reported between 10 and 15 percent of its sites with less than 75 percent data recovery, and 6 agencies reported between 15 and 20 percent of their sites with less than 75 percent data recovery. These data show that 42 of the 63 agencies audited (66 percent) have a 75 percent or better rate for data capture for at least 90 percent of their SLAMS sites. Independent verification of these data is a tedious hand calculation problem; therefore, it has not been attempted. A computer program to perform this task is currently under development.

Responses from the audit questionnaire indicate that with only two exceptions (3 percent), all other agencies use monitoring instruments that are designated as either reference methods or equivalent methods by EPA. The non-equivalent instruments utilized in these two States are limited to lead sites in one State and a few TSP locations in the other. All State agencies except two (4 percent) submit an annual SLAMS data report as required by 40 CFR 58.26.

FIGURE 3

PERCENT OF SITES BY AGENCY REPORTING DATA >45 DAYS LATE

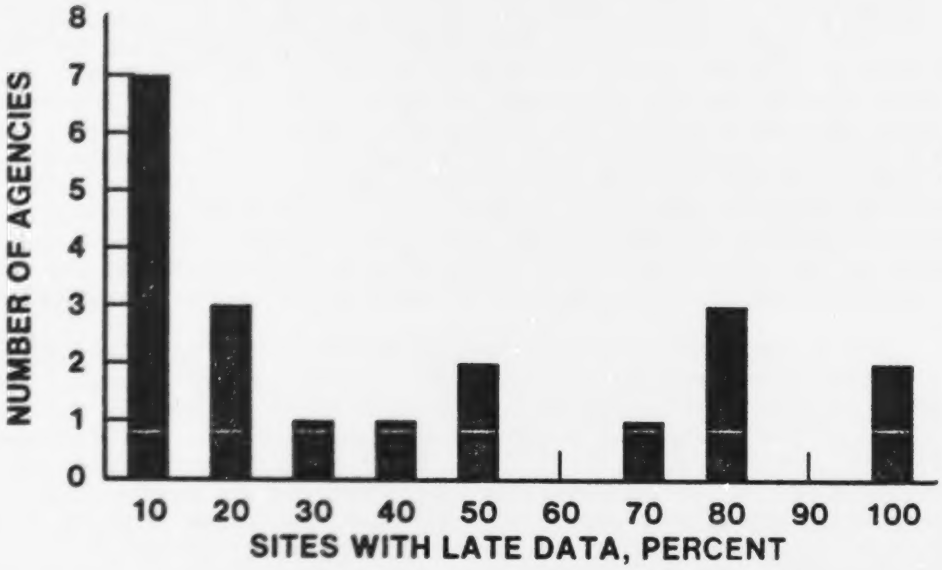
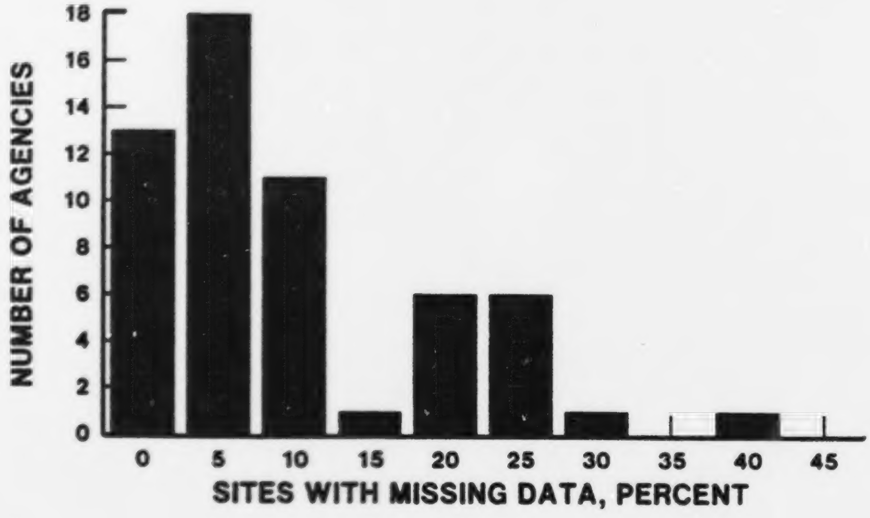


FIGURE 4

PERCENT OF SITES REPORTING <75% OF DATA



F. FACILITIES, STAFF, AND EQUIPMENT

In order to conduct bi-weekly precision checks and quarterly performance (accuracy) audits as specified in Appendix A to 40 CFR 58, trained staff, adequate facilities, and access to the National Bureau of Standards (NBS) traceable gas and flow standards are necessary. Of those responding to the audit questionnaire, 84 percent of all agencies did have sufficient staff, facilities, and access to NBS traceable gas to conduct bi-weekly precision checks and quarterly audits. Two States and one local agency did not operate continuous monitors; thus, bi-weekly precision checks were not necessary and the question therefore was not applicable. Nine agencies (16 percent) were not adequately trained or equipped to conduct bi-weekly precision checks and quarterly audits. Comments included inadequate training budgets, additional funding required for expanding networks or replacing monitors, and problems with obtaining up-to-date calibration gases for precison checks. An independent equipment needs survey has been conducted which confirms the need to replace old monitoring equipment.

The air monitoring audit also questioned whether agencies had adequate laboratory procedures, staff, and facilities to conduct the tests and analyses needed to implement the Agency's SLAMS monitoring and quality assurance plans. Of the 61 agencies which answered the question, 56 (92 percent) did have adequate laboratory facilities. Of the five negative responses, quality assurance documentation was inadequate at one agency, laboratory space was inadequate at another, lead procedures needed updating at a third, a new atomic absorption spectrophotometer was needed at the fourth, and inadequate (too few) staff were reported at the fifth. Two agencies did not respond to the question.

VII. EVALUATION OF THE FY 1984 AIR AUDIT EFFORT

A. INTRODUCTION

In spite of the fact that FY 1984 was the initial year for the National Air Audit System (NAAS), and a number of first-year implementation problems were experienced, the audit provided a reasonable assessment of the health of the national air quality management program. The mere fact that the EPA Regions and the State and local air pollution control agencies were able to accomplish the complex and resource-intensive job of completing the audit of 68 agencies is a major feat in itself. This first audit was of necessity a learning experience in which EPA came to understand how to improve successive audits. An evaluation of what was learned during the FY 1984 audits of the four individual program areas follows.

B. AIR QUALITY PLANNING AND SIP ACTIVITIES

The air quality planning and SIP activities section of the FY 1984 NAAS attempted to examine what agencies do and to verify how they do it, i.e., how effectively they use their resources and how good their outputs are. Although the "what" questions of this audit seemed to fare better in the audit, they are also the easiest to ask and to answer. The "how" questions will need more work in the FY 1985 audit effort. Due to the lack of specificity in some of the questions, and the lack of detailed responses from many agencies, the FY 1984 audit could not, in some instances, comprehensively and accurately verify how effective most agencies are doing their jobs. Nevertheless, the audit effort was successful in identifying certain areas of concern as well as those areas where the air quality planning process is being implemented successfully.

Of the 68 agencies that participated in the FY 1984 audit, 61 programs (49 States, the District of Columbia, 2 Territories, and 9 local agencies) were audited for all four sections of the air quality planning and SIP activities chapter. (The State of California was not audited except for the local Ventura County agency.) In addition, two local agencies (Chicago and Cook Co., IL) supplied questionnaires only for the section of the audit dealing with emission inventories. About half of the audit questionnaires were completed by the State, and about one-third was completed by the Regional Offices. Three questionnaires were filled out jointly by both the State and the Regional Office, two to four were unusable in various parts, and three were not supplied. In all but one Region, the Regional Office prepared an executive summary. The Regions' evaluation and discussion of the State or local agency's audits ranged from almost nothing to a detailed 14 page analysis.

Considerable inconsistency existed among EPA Regions in the comprehensiveness and level of detail provided in the audit activities. For example, some audited States did not complete questionnaires or submitted unusable ones. Some Regions chose to fill out the questionnaires for all or almost all of their States while in other Regions the States alone answered the questions. One Region's evaluation consisted of a one or two page summary for the entire chapter, while other Regions provided several pages on each section of the chapter and a dozen or so pages in all.

The majority of State and local responses lacked sufficient detail or explanation of their answers. A one-word "yes" or "no" response was typical of many responses even where further detail was required by the audit quidelines. Only a dozen or so agencies provided a sufficient level of detail to most of the audit questions.

A significant number of the audit questions resulted in responses from which no definite conclusions could be drawn. For the most part, this is probably the fault of the wording of the question, and not the responding agency.

Consideration of the problems encountered in implementing the FY 1984 audit effort has led to a realization that certain changes need to be made in the audit program for FY 1985. In particular, the FY 1985 audit of air quality planning and SIP activities will emphasize the following:

- Streamlining and clarifying questions to eliminate any confusing jargon so as to guide the responses of State and local agencies toward an appropriate level of detail.

- Standardizing the activities of the EPA Regional Offices in reviewing the State and local audits and promoting national consistency in the performance of the audit.

- Having State and local agencies complete the questionnaires and, if time permits, send them to the Regional Offices. Regional Offices will then review the answers provided and comment in the appropriate space before the on-site visit.

- Encouraging EPA Regions to spend more time with the State and local agencies to make sure that all audit questions are clearly understood and adequately addressed. Both sides of any unresolved disagreements between control agencies and EPA Regions should be clearly presented on the questionnaire.

C. NEW SOURCE REVIEW

The FY 1984 new source review (NSR) audit was successful as an initial assessment of the present NSR framework. The audit verified that 64 State/local agencies are generally familiar with and have strong support for the preconsruction review process. The basic State/local framework appears to be in place for the review of projects before they commence construction. The FY 1984 audit was also successful in establishing a valuable feedback mechanism to identify where EPA should emphasize future policy development.

Various problems were encountered, however, during the FY 1984 NSR audit that limited its ability to provide definitive answers regarding the way that many of the program details actually function. Three types of problems are worth noting. These include the inconsistent quality of the individual audit reports, the poor condition of some permit files that were selected for auditing, and the limited number of major source permits issued during the period covered by the audit.

Concerning the individual audit reports, there were several contributing factors. First, there was some confusion as to what certain audit questions meant and how they were to be answered. This appeared to be caused in large part by either late or no advance circulation of the audit guidance that provided an explanation of each question asked in the new source review audit section. Consequently, some questions were left unanswered, or were improperly answered (these were reinterpreted where possible). Second, perhaps also as a result of the unavailability of guidance, answers to the questionnaire tended to be very brief and imprecise, leaving much uncertainty as to how they should be interpreted. Finally, the completed questionnaires were not consistent in terms of whether the answers had been provided by the audited agency or by the EPA Regional Office. Some Regions submitted the questionnaire containing the audited agency's answers accompanied by a narrative audit report that sometimes suggested contradictory conclusions to particular questions. This also resulted in an effort within EPA headquarters to attempt a reinterpretation of the questionnaire responses.

Regional auditors attempting to inspect individual permit files often were confronted by files that were fragmented, disorganized, and inadequately documented. Such conditions were reported in almost half of the audited programs. This contributed to slowing down the audit process as well as making it difficult to determine whether the appropriate procedures were actually followed pursuant to issuing the permit. The lack of documentation caused problems in evaluating the applicability determinations, the ambient impact analyses, and best available control technology (BACT) determinations, among other things.

The third problem, which is totally external to the audit development process itself, involved the limited number of permits that had been issued to major sources during the audit period. Due to the limited number of major source reviews available to audit, it was difficult to satisfactorily evaluate agency performance in the key areas of prevention of significant deterioration (PSD) and emission offsets in nonattainment areas.

Recognizing these problems, the NSR audit committee chose certain corrective actions for FY 1985. The first step has been to take the questionnaire and make revisions to it where appropriate. Having established a national data base that identifies the national framework for the new source review program in FY 1984, the FY 1985 audit will focus more attention on agency performance, i.e., permits issued. In order to accomplish this, the questionnaire is being revised so that it can be used to audit permit files in a comprehensive manner. All seven of the original NSR audit topics will be retained to some extent. Questions will be revised and supplemented, however, to encourage more precise and consistent responses, to eliminate potentially confusing terminology, and to facilitate the final processing and analysis of the responses.

The NSR audit committee is also developing more specific guidance to be used in the selection of permit files. This will help to en[illegible] more uniformity in the types and numbers of permits that are audited. The questionnaire itself will ensure that the depth of each file audit is relatively consistent. Meanwhile, each audited agency will be asked to summarize its permit issuing activities for the audit period (or within a reasonably similar time frame) to better enable the auditors to put into proper perspective the representativeness of the findings resulting from those permits that are actually audited.

Assuming that such corrective actions are successful in alleviating many of the problems experienced during the FY 1984 audit, one remaining problem needs to be considered. This is the problem of permit documentation. The overall success of a permit file audit depends to a large degree on the information available within each audit file. No drastic changes in work practices or administrative procedures are being suggested. However, the need for complete, well-documented files exists because it allows the auditor to complete the auditing task more expeditiously and, perhaps more importantly, it provides a clear trail through the agency's preconstruction review process. Furthermore, the importance of understanding how and why particular determinations and decisions were made is not only an important part of the audit process, but is also essential in the event of enforcement actions that may arise for any number of reasons, such as citizen complaints, lawsuits, and compliance actions.

D. COMPLIANCE ASSURANCE

The major parts of the FY 1984 compliance assurance audit were envisioned to be performance of a pre-visit assessment of each State air compliance program, review of State source files, and performance of overview inspections. For the pre-visit assessment, the EPA Regions were to analyze the compliance data system (CDS) data for State progress in meeting compliance goals, and then summarize the findings in a report to the State prior to the audit. The actual State audit visit was to concentrate on the findings in the pre-visit assessment as well as file reviews of 15-20 sources from the three air programs dealing with State implementation plans (SIP's), new source performance standards (NSPS), and national emission standards for hazardous air pollutants (NESHAP). Finally, overview inspections were to be conducted by EPA of 2-3 percent of the CDS source inventory (these could be done jointly with State personnel). The Regions were then to write audit reports for each State and include a discussion of the pre-visit assessment, file status, and overview inspections.

Because there were minimal detailed instructions for the compliance assurance portion of the audit, the EPA Regions had the flexibility to develop the exact make-up of each audit within the confines of general guidance on the subject. Consequently, there was little consistency among or even within some Regions in the content and format of the audit reports. As noted in Chapter V of this report deficiencies such as lack of a pre-visit assessment summary and lack of discussion of overview inspections, along with the inconsistencies, made it difficult to write the national summary on compliance assurance. Other deficiencies also made it difficult in some cases to determine exactly of what an audit consisted.

It is clear from the results of the FY 1984 audit that a more detailed format is essential for the compliance assurance program in FY 1985. The EPA/STAPPA/ALAPCO air compliance committee will address this need. The format agenda will cover essentially the same areas as found in the FY 1984 audits and include specific, "bottom line" questions on the Regions' opinions of the State's air compliance program based on the facts gathered during the audit. A uniform set of questions to be used by all ten Regions will ensure consistency in the NAAS effort, and provide an accurate basis for national comparison State compliance programs.

Regarding overview inspections, the Regions should be performing them now so the results can be included in next year's reports. A summary of the overview inspection effort with results is required in every FY 1985 State or local compliance assurance audit report.

E. AIR MONITORING

The air monitoring portion of the FY 1984 audit effort was intended to provide an overview and summary assessment of the ambient air monitoring program. The interim monitoring questionnaire was not intended to replace the systems audits required by the monitoring regulations but rather was intended to impose a greater degree of Regional consistency in the performance of audits than had occurred in the past. We believe that these objectives have been met in this audit. Forty-eight States and some local agencies were audited and generally the responses have provided varying degrees of useful information from a high percentage of those responding.

This initial audit served as an appropriate independent confirmation of the status of the major aspects of the ambient air monitoring program carried out by a majority of the State and local agencies. The results of the audit correspond very well with previous EPA evaluations of air monitoring network design and siting, data submission, and quality assurance. In addition to the goals stated above, the audit process appeared to be a good, although not a fully utilized, mechanism for documentation of specific program needs. For example, several agencies used the questionnaire to express specific needs such as replacement of worn-out or obsolete equipment.

The principal problems encountered with the FY 1984 air monitoring audit program appear to be related to the ambiguity or inappropriateness of some of the questions in the audit questionnaire. For example, one of the questions was stated as follows: "Are the Agency's SLAMS instruments designated as reference or equivalent methods by EPA and operated in accordance with 40 CFR 50, 53, and 58?" The problem with this question comes when trying to interpret what an unelaborated "no" response means. Does it mean the instruments are not equivalent? If so, how many; all, some, or 1 out of 100? The agencies were requested to elaborate on all negative responses to audit questions; however, there were a significant number of negative responses to one or more questions with no elaboration. Another example of a problem question was the one which requested that the precision and accuracy values be submitted for the last 2 years. This request amounts to a substantial resubmission of data already in EPA's possession.

To improve the air monitoring audit process for FY 1985, the questionnaire has been redesigned to improve the information received and facilitate its completion. Many agencies objected to the FY 1984 questions that required resubmission of data that EPA already had in its possession. This type of request will be replaced by some process of confirmation of the data already in EPA's possession.

An additional area of improvement in the 1985 audit process is the inclusion of a "corrective action agreement" in the air monitoring audit. A new audit protocol being developed for the EPA Quality Assurance Handbook will contain a "corrective action agreement" for use in systems audits. This agreement will summarize deficiencies discovered during an audit and provide for an agreed-upon course of action to correct the deficiencies. This will serve as a very useful tool to begin the process of correcting deficiencies discovered during the audit, especially small or minor problems.